Westwood

COURSEN-KOEHLER

WATER POLLUTION ABATEMENT PLAN

AutoZone #5196

RN
CN 603660564

Bexar County, Texas

January 2020

Prepared for:

Huey Commercial Properties, LTD.
11 Lynn Batts Lane
Suite 100
San Antonio, Texas 78218

Prepared by:

Westwood Professional Services
TBPE Firm No. F-11756

1718 Dry Creek Way, Suite 110
San Antonio, Texas 78259
210.265.8300
Contact: Yen W. Lai, PE

Texas Commission on Environmental Quality

Edwards Aquifer Application Cover Page

Our Review of Your Application

The Edwards Aquifer Program staff conducts an administrative and technical review of all applications. The turnaround time for administrative review can be up to 30 days as outlined in 30 TAC 213.4(e). Generally administrative completeness is determined during the intake meeting or within a few days of receipt. The turnaround time for technical review of an administratively complete Edwards Aquifer application is 90 days as outlined in 30 TAC 213.4(e). Please know that the review and approval time is directly impacted by the quality and completeness of the initial application that is received. In order to conduct a timely review, it is imperative that the information provided in an Edwards Aquifer application include final plans, be accurate, complete, and in compliance with 30 TAC 213.

Administrative Review

1. Edwards Aquifer applications must be deemed administratively complete before a technical review can begin. To be considered administratively complete, the application must contain completed forms and attachments, provide the requested information, and meet all the site plan requirements. The submitted application and plan sheets should be final plans. Please submit one full-size set of plan sheets with the original application, and half-size sets with the additional copies.

   To ensure that all applicable documents are included in the application, the program has developed tools to guide you and web pages to provide all forms, checklists, and guidance. Please visit the below website for assistance: http://www.tceq.texas.gov/field/eapp.

2. This Edwards Aquifer Application Cover Page form (certified by the applicant or agent) must be included in the application and brought to the administrative review meeting.

3. Administrative reviews are scheduled with program staff who will conduct the review. Applicants or their authorized agent should call the appropriate regional office, according to the county in which the project is located, to schedule a review. The average meeting time is one hour.

4. In the meeting, the application is examined for administrative completeness. Deficiencies will be noted by staff and emailed or faxed to the applicant and authorized agent at the end of the meeting, or shortly after. Administrative deficiencies will cause the application to be deemed incomplete and returned.

   An appointment should be made to resubmit the application. The application is re-examined to ensure all deficiencies are resolved. The application will only be deemed administratively complete when all administrative deficiencies are addressed.

5. If an application is received by mail, courier service, or otherwise submitted without a review meeting, the administrative review will be conducted within 30 days. The applicant and agent will be contacted with the results of the administrative review. If the application is found to be administratively incomplete, it can be retrieved from the regional office or returned by regular mail. If returned by mail, the regional office may require arrangements for return shipping.

6. If the geologic assessment was completed before October 1, 2004 and the site contains "possibly sensitive" features, the assessment must be updated in accordance with the *Instructions to Geologists* (TCEQ-0585 Instructions).

Technical Review

1. When an application is deemed administratively complete, the technical review period begins. The regional office will distribute copies of the application to the identified affected city, county, and groundwater conservation district whose jurisdiction includes the subject site. These entities and the public have 30 days to provide comments on the application to the regional office. All comments received are reviewed by TCEQ.

2. A site assessment is usually conducted as part of the technical review, to evaluate the geologic assessment and observe existing site conditions. The site must be accessible to our staff. The site boundaries should be

clearly marked, features identified in the geologic assessment should be flagged, roadways marked and the alignment of the Sewage Collection System and manholes should be staked at the time the application is submitted. If the site is not marked the application may be returned.

3. We evaluate the application for technical completeness and contact the applicant and agent via Notice of Deficiency (NOD) to request additional information and identify technical deficiencies. There are two deficiency response periods available to the applicant. There are 14 days to resolve deficiencies noted in the first NOD. If a second NOD is issued, there is an additional 14 days to resolve deficiencies. If the response to the second notice is not received, is incomplete or inadequate, or provides new information that is incomplete or inadequate, the application must be withdrawn or will be denied. Please note that because the technical review is underway, whether the application is withdrawn or denied **the application fee will be forfeited**.
4. The program has 90 calendar days to complete the technical review of the application. If the application is technically adequate, such that it complies with the Edwards Aquifer rules, and is protective of the Edwards Aquifer during and after construction, an approval letter will be issued. Construction or other regulated activity may not begin until an approval is issued.

Mid-Review Modifications

It is important to have final site plans prior to beginning the permitting process with TCEQ to avoid delays.

Occasionally, circumstances arise where you may have significant design and/or site plan changes after your Edwards Aquifer application has been deemed administratively complete by TCEQ. This is considered a "Mid-Review Modification". Mid-Review Modifications may require redistribution of an application that includes the proposed modifications for public comment.

If you are proposing a Mid-Review Modification, two options are available:

- If the technical review has begun your application can be denied/withdrawn, your fees will be forfeited, and the plan will have to be resubmitted.
- TCEQ can continue the technical review of the application as it was submitted, and a modification application can be submitted at a later time.

If the application is denied/withdrawn, the resubmitted application will be subject to the administrative and technical review processes and will be treated as a new application. The application will be redistributed to the affected jurisdictions.

Please contact the regional office if you have questions. If your project is located in Williamson, Travis, or Hays County, contact TCEQ's Austin Regional Office at 512-339-2929. If your project is in Comal, Bexar, Medina, Uvalde, or Kinney County, contact TCEQ's San Antonio Regional Office at 210-490-3096

Please fill out all required fields below and submit with your application.

1. Regulated Entity Name: AutoZone TX5196							**2. Regulated Entity No.:**			
3. Customer Name: Huey Commercial Properties, LTD.							**4. Customer No.:** 603660564			
5. Project Type: **(Please circle/check one)**	(New)		Modification				Extension		Exception	
6. Plan Type: **(Please circle/check one)**	(WPAP)	CZP	SCS	UST	AST		EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: **(Please circle/check one)**	Residential		(Non-residential)				**8. Site (acres):**			1.272
9. Application Fee:	$4,000.00		**10. Permanent BMP(s):**				Jellyfish & Vegetative Filter Strip			
11. SCS (Linear Ft.):	N/A		**12. AST/UST (No. Tanks):**				N/A			
13. County:	Bexar		**14. Watershed:**				Salado Creek Watershed			

Application Distribution

Instructions: Use the table below to determine the number of applications required. One original and one copy of the application, plus additional copies (as needed) for each affected incorporated city, county, and groundwater conservation district are required. Linear projects or large projects, which cross into multiple jurisdictions, can require additional copies. Refer to the "Texas Groundwater Conservation Districts within the EAPP Boundaries" map found at:

http://www.tceq.texas.gov/assets/public/compliance/field_ops/eapp/EAPP%20GWCD%20map.pdf

For more detailed boundaries, please contact the conservation district directly.

Austin Region			
County:	**Hays**	**Travis**	**Williamson**
Original (1 req.)	—	—	—
Region (1 req.)	—	—	—
County(ies)	—	—	—
Groundwater Conservation District(s)	__Edwards Aquifer Authority __Barton Springs/ Edwards Aquifer __Hays Trinity __Plum Creek	__Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	__Austin __Buda __Dripping Springs __Kyle __Mountain City __San Marcos __Wimberley __Woodcreek	__Austin __Bee Cave __Pflugerville __Rollingwood __Round Rock __Sunset Valley __West Lake Hills	__Austin __Cedar Park __Florence __Georgetown __Jerrell __Leander __Liberty Hill __Pflugerville __Round Rock

San Antonio Region					
County:	**Bexar**	**Comal**	**Kinney**	**Medina**	**Uvalde**
Original (1 req.)	1	—	—	—	—
Region (1 req.)	1	—	—	—	—
County(ies)	1	—	—	—	—
Groundwater Conservation District(s)	1 Edwards Aquifer Authority 1 Trinity-Glen Rose	__Edwards Aquifer Authority	__Kinney	__EAA __Medina	__EAA __Uvalde
City(ies) Jurisdiction	__Castle Hills __Fair Oaks Ranch __Helotes __Hill Country Village __Hollywood Park 1 San Antonio (SAWS) __Shavano Park	__Bulverde __Fair Oaks Ranch __Garden Ridge __New Braunfels __Schertz	NA	__San Antonio ETJ (SAWS)	NA

I certify that to the best of my knowledge, that the application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review.

Yen W. Lai, P.E.

Print Name of Customer/Authorized Agent

Signature of Customer/Authorized Agent

01/17/2020

Date

FOR TCEQ INTERNAL USE ONLY				
Date(s)Reviewed:		Date Administratively Complete:		
Received From:		Correct Number of Copies:		
Received By:		Distribution Date:		
EAPP File Number:		Complex:		
Admin. Review(s) (No.):		No. AR Rounds:		
Delinquent Fees (Y/N):		Review Time Spent:		
Lat./Long. Verified:		SOS Customer Verification:		
Agent Authorization Complete/Notarized (Y/N):		Fee Check:	Payable to TCEQ (Y/N):	
Core Data Form Complete (Y/N):			Signed (Y/N):	
Core Data Form Incomplete Nos.:			Less than 90 days old (Y/N):	

General Information

TCEQ - 0587

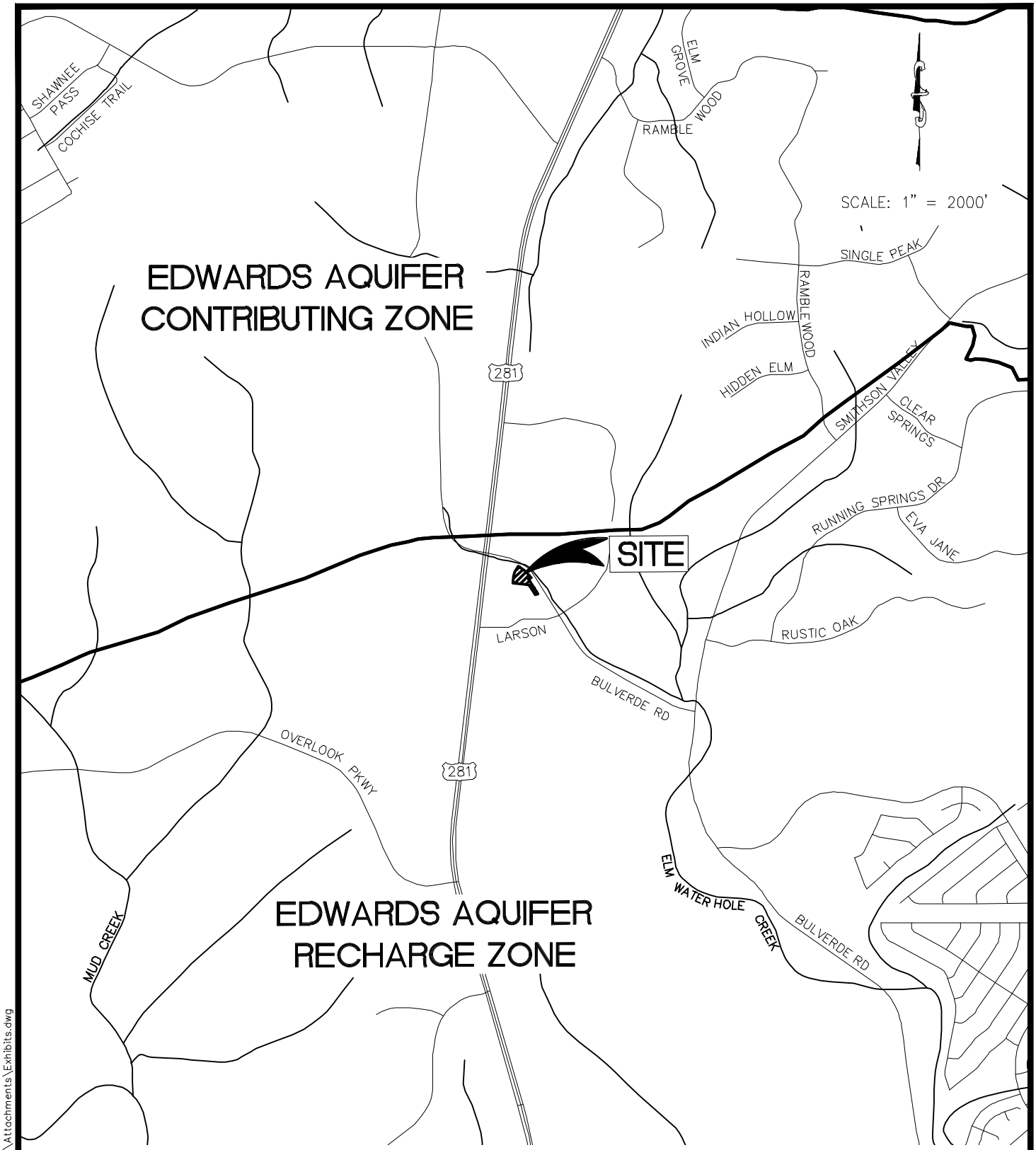
ATTACHMENTS

Attachment A – Road Map

Attachment B – USGS / Edwards Recharge Zone Map

Attachment C – Project Description

Attachment A – Road Map



MAP SOURCE: TEXAS NATURAL RESOURCES INFORMATION SYSTEM; 2015 TxDOT URBAN FILE

Westwood
COURSEN-KOEHLER
a division of Westwood
1718 Dry Creek Way, Suite 110 • San Antonio, Texas 78259
Tel: 210.265.8300 • Fax: 210.855.5530
TBPE Firm No. F-11756 • TBPLS Firm No. 10194064
www.westwoodps.com

AUTOZONE STORE 5196
SAN ANTONIO, TEXAS

ROAD MAP

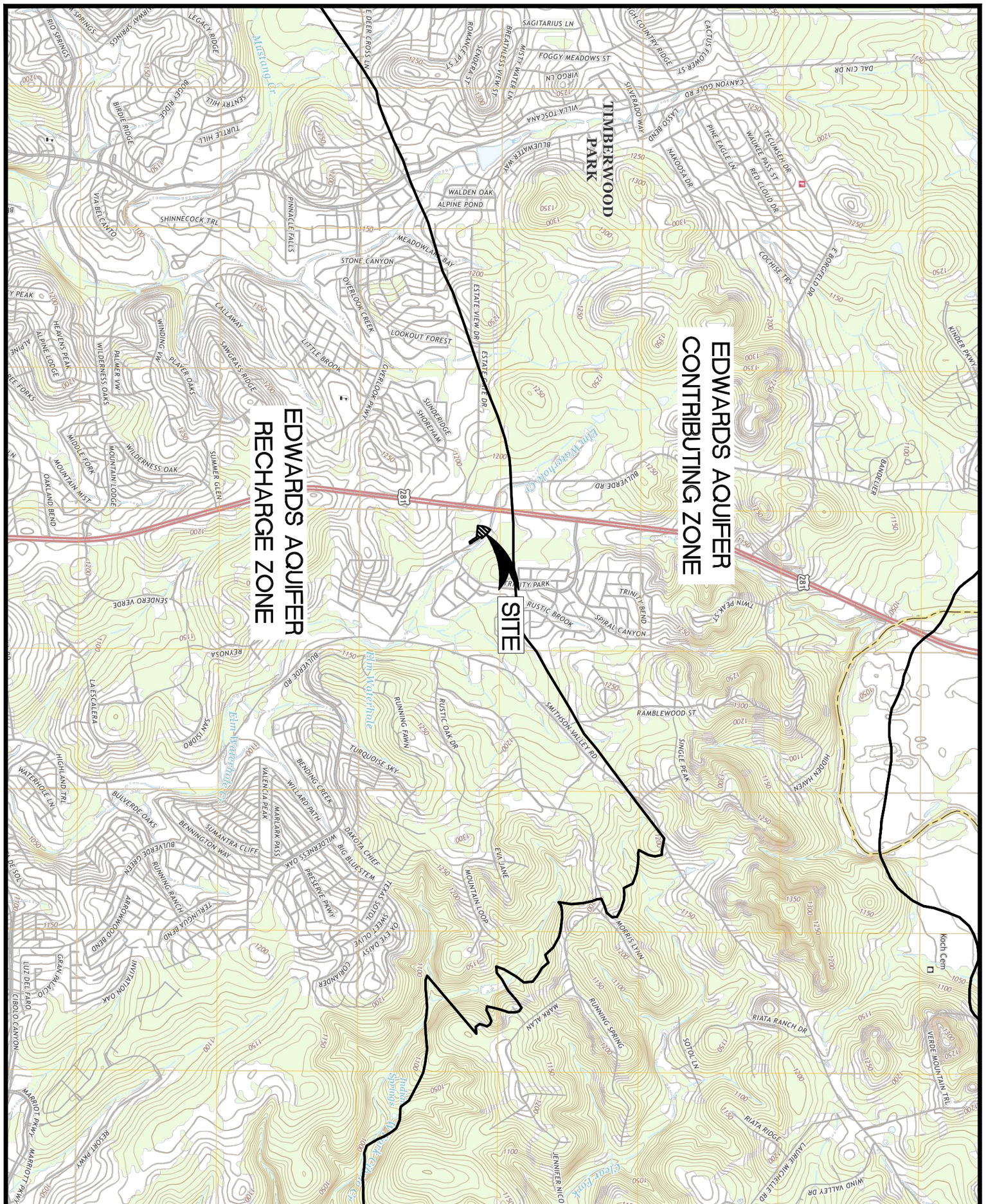
JOB NO.:	23362.00
DATE:	8/7/2019
DRAWN:	AML

ATTACHMENT A

File: N:\0023362.00\3_Civil\TCEQ\WPAP\Attachments\Exhibits.dwg

Attachment B – USGS / Edwards Recharge Zone

File: N:\0023362.00\3 Civil\TCEQ\WPAP\Attachments\Exhibits.dwg



MAP SOURCE: USGS TOPO MAPS; BULVERDE, TX 7.5 MINUTE QUADRANGLE

SCALE: 1" = 1000'

ATTACHMENT B

JOB NO.: 23362.00
DATE: 01/10/2020
DRAWN: AML

AUTOZONE STORE 5196
SAN ANTONIO, TEXAS

USGS / EDWARDS RECHARGE ZONE MAP

Westwood
COURSEN-KOEHLER
a division of Westwood
1718 Dry Creek Way, Suite 110 • San Antonio, Texas 78259
Tel: 210.265.8300 • Fax: 210.855.5530
TBPE Firm No. F-11756 • TBPLS Firm No. 10194064
www.westwoodps.com

Attachment C – Project Description

The 1.27 acre development consists of the construction of AutoZone #5196 in one phase. The project is located in Bexar County, inside the city limits of San Antonio, at the southeast corner of US HW 281 and Bulverde Road. The site is currently undeveloped.

The proposed development is a commercial retail store with 18 parking spaces and a loading area. The construction of the retail store will result in an increase of approximately 35,200 ft2 (0.808 acres) of impervious cover.

The site is adjacent to an existing Bill Millers restaurant and Bulverde Road. Based on available topographic data, there are no offsite drainage areas that will drain onto the site after construction.

The proposed overall post development impervious cover for the development is approximately 0.817 acres (64.2%), which includes existing impervious cover, and therefore permanent Best Management Practices (BMP'S) are required. The tract generally slopes to the northeast to an existing drainage system built along Bulverde Rd.

Runoff from the building and majority of the parking lot, 0.577 acres, is to be conveyed through the parking lot and captured in a trench grate and treated by a Contech Jellyfish JFPD0806 Stormwater filtration system. A portion of the proposed access road, 0.193 acres, will be conveyed to and treated by an engineered vegetative filter strip. The open area between the parking lot and Bulverde, that contains a meandering sidewalk, will also be treated by an engineered vegetative strip. The remaining area, 0.098 acres, which include portions of the two access driveways and the area directly behind the building will not be treated. The tract currently houses an existing Contech Vortech filter system for treatment of the stormwater from the existing development to the west. The Vortech filter and outlet structure along with an existing highline electric pole make up the existing impervious cover located on this property. The Jellyfish JFPD0806 filtration system and vegetative filter strip will over treat to compensate for the impervious cover and remaining areas that are not proposed to be treated.

Sanitary sewer service will be provided by an underground sewage collection system. The onsite system will tie into an existing sanitary sewer lateral.

Geological Assessment

TCEQ – 0585

GEOLOGIC ASSESSMENT (WPAP)

AUTOZONE STORE #M659
1.028 ACRES
SAN ANTONIO, TEXAS

FROST GEOSCIENCES, INC. PROJECT NO.: FGS-E19234
SEPTEMBER 25, 2019

Prepared exclusively for

Westwood Professional Services
1718 Dry Creek Way, Suite 110
San Antonio, TX 78259

Frost GeoSciences
Geotechnical ▪ Construction Materials
Geologic ▪ Environmental

Frost GeoSciences
Geotechnical • Construction Materials
Geologic • Environmental

Frost Geosciences, Inc.
13406 Western Oak
Helotes, Texas 78023
Office (210)-372-1315
Fax (210)-372-1318
www.frostgeosciences.com
TBPE Firm Registration # F-9227
TBPG Firm Registration # 50040

September 25, 2019

Westwood Professional Services
1718 Dry Creek Way, Suite 110
San Antonio, TX 78259

Attn: Mr. Garth Coursen, San Antonio Land Leader

SUBJECT:
Geologic Assessment (WPAP)
for the Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
AutoZone Store #M659
+/- 1.028 Acres
San Antonio, Texas
FGS Project Nº FGS-E19234

Dear Mr. Coursen:

Frost GeoSciences, Inc., (FGS) is pleased to submit the enclosed Geologic Assessment completed for the above referenced project site as it relates to 30 TAC §213.5(b)(3), effective June 1, 1999. Our investigation was conducted, and this report was prepared in general accordance with the "Instructions to Geologists", TCEQ-0585-Instructions (Rev. 10-1-04).

If you have any questions regarding this report, or if Frost GeoSciences, Inc. may be of additional assistance to you on this project, please feel free to call our office. It has been a pleasure to work with you and we wish to thank you for the opportunity to be of service to you on this project. We look forward to being of continued service.

We appreciate the opportunity to perform these services for Westwood Professional Services. Please contact the undersigned if you have questions regarding this report.

Respectfully submitted,
Frost GeoSciences, Inc.

Chris Wickman, P.G.
Senior Geologist

Copies Submitted: (6) Mr. Garth Coursen; Westwood Professional Services
(1) Electronic (pdf) Copy

TABLE OF CONTENTS

LOCATION

The project site is located approximately 400 feet southeast of the intersection of Bulverde Road and U.S. Highway 281 in San Antonio, Texas. An overall view of the area is shown on copies of the site plan, a street map, the U.S.G.S. Topographic Map, the Bexar County Watersheds Map, the EAA-Edwards Aquifer Recharge Zone and Contributing Zone Map, the FIRM Map, the U.S. Geological Survey, Geologic Framework and Hydrostratigraphy of the Edwards and Trinity Aquifers within Northern Bexar and Comal Counties, Texas, Science Investigations Map, a 2018 aerial photograph at a scale of 1"=500', a 2018 aerial photograph at a scale of 1"=100', and a NRCS Web Soil Survey aerial photograph at a scale of 1"=200' and are included on Figures 1 through 10 in Appendix A.

METHODOLOGY

The Geologic Assessment was performed by Mr. Chris Wickman, P.G., Senior Geologist with Frost GeoSciences, Inc. Mr. Wickman is a Licensed Professional Geoscientist in the State of Texas (License # 10403).

Frost GeoSciences, Inc. researched the geology of the area east of the intersection of Bulverde Road and U.S. Highway 281. The research included, but was not limited to, the Geologic Atlas of Texas, San Antonio Sheet, FEMA maps, Edwards Aquifer Recharge Zone Maps, U.S.G.S. 7.5 Minute Quadrangle Maps, U.S. Geological Survey, Geologic Framework and Hydrostratigraphy of the Edwards and Trinity Aquifers within Northern Bexar and Comal Counties, Texas, Science Investigations Map, the Bureau of Economic Geology-Geologic Atlas of Texas, the Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle, the U.S.G.S. Water-Resources Investigations Report 95-4030, and the U.S.D.A. Soil Survey of Bexar County, Texas.

After reviewing the available information, a field investigation was performed to identify any geologic or man-made Potential Recharge Features (PRFs). A transect spacing of approximately 50 feet, or less depending on vegetation thickness, was used to inspect the project area. A 2018 aerial photograph, in conjunction with a hand-held Garmin GPS 72H Global Positioning System with an Estimated Potential Error ranging from 10 to 14 feet, was used to navigate around the property and identify the locations of PRFs, as recommended in the "Instructions to Geologists", TCEQ-0585-Instructions (Rev. 10-1-04). The locations of any PRFs noted in the field were marked with blue and white flagging. The flagging is numbered with the same potential recharge feature I.D. # that is used on the Site Geologic Map. The Site Geologic Map, indicating the limits of the project site, and the locations of PRFs and rock outcrops noted on the project site, is included in the Attachments at the end of this report. A copy of a 2018 Aerial Photograph at an approximate scale of 1" =100' indicating the limits of the project site, and the locations of PRFs and rock outcrops noted on the project site, is included on Figure 10 in Appendix A. The Geologic Assessment Form TCEQ-0585, (Rev. 2-11-15), Stratigraphic Column, and the Geologic Assessment Table have been filled with the appropriate information for this project site and are included with the Attachments at the end of this report.

RESEARCH & OBSERVATIONS

7.5 Minute Quadrangle Map Review

According to the U.S.G.S. 7.5 Minute Quadrangle Map, Bulverde, Texas Sheet (1988), the elevation across the project site ranges from 1150 to 1170 feet above mean sea level. The project site has a total relief of approximately 20 feet. Runoff from the project site flows to the west-northwest into Elm Waterhole Creek (lower reach). Bulverde Road is located along the eastern property line of the project site. The intersection of Bulverde Road and U.S. Highway 281 is northwest of the project site. The project site is depicted as undeveloped wooded land. A copy of the U.S.G.S. 7.5 Minute Quadrangle Map indicating the location of the project site is included on Figure 3 in Appendix A.

Bexar County Watersheds Map

According to the Bexar County Watersheds Map (2003), the project site is located within the Upper Salado Creek Watershed Area. A copy of the Bexar County Watersheds Map indicating the location of the project site is included on Figure 4 in Appendix A.

Recharge/Transition Zone

According to the E.A.A. Edwards Aquifer Recharge Zone and Contributing Zone Map, Bulverde, Texas (2014), the Official Edwards Aquifer Recharge Zone Map, Bulverde, Texas Sheet (1988), and Edwards Underground Water District Reference Map, (March 1988), the project site is located within the Recharge Zone of the Edwards Aquifer. A copy of the E.A.A. Edwards Aquifer Recharge Zone and Contributing Zone Map indicating the location of the project site is included on Figure 5 in Appendix A.

100-Year Floodplain

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for the Flood Insurance Map, Community Panel Number 48029C0130G, dated September 29, 2010 was reviewed to determine if the project site is located in areas prone to flooding. A review of the above-mentioned Panel No. indicates that the project site is located within "Zone X". According to the Panel Legend, Zone X represents areas determined to be outside the 0.2% annual chance floodplain. A copy of the above referenced FIRM panel indicating the location of the project site is included on Figure 6 in Appendix A.

Soils

According to the United States Department of Agricultural (USDA) Natural Resources Conservation Service (NRCS) Soil Survey of Bexar County (1966) and the USDA NRCS Web Soil Survey (WSS) website: https://websoilsurvey.nrcs.usda.gov, the Site is located on the Crawford and Bexar Stony Soils (Cb). A copy of the 2014 aerial photo (approximate scale: 1"=200') obtained from the Web Soil Survey (WSS) website: https://websoilsurvey.nrcs.usda.gov has been included on Figure 7 in Appendix A

- The Crawford and Bexar Stony Soils (Cb) are very dark grayish brown to reddish brown clay. They are stony clay in texture and are shallow to moderately deep over hard

limestone. These soils are extensive in the northern part of the county. The surface layer is non-calcareous, about 8 inches thick, and very dark grayish brown or very dark brown. It has fine, subangular blocky and granular structure. When moist, this layer is very firm but breaks easily to a mass of fine clods. When dry, is very hard and contains many large cracks. Angular fragments of chert and limestone are common. These fragments may range in size from a quarter of an inch to 24 inches in diameter. The subsurface layer is dense, angular blocky clay. This layer is neutral or slightly acidic, but it may be limy in the lower parts. It is about 26 inches thick and either overlies a thin layer of yellowish red to pale brown, limy clay or, if the limy layer is lacking, rests on hard, fractured limestone. Crawford soils are naturally well drained. Internal drainage and permeability vary according to moisture content. Water moves rapidly when the soil is dry and cracked, but very slowly when the soil is wet. This soil has a USDA Texture Classification of Cherty Clay Loam to Loam. The Unified Classification is CG or CL. The AASHO Classification is A-2, A-4, or A-6. This soil has an average permeability from 1.0 to 1.5 inches/hour.

Narrative Description of the Site Geology

Based on a visual inspection of the ground surface, the overall potential for fluid flow from the project site into the Edwards Aquifer appears to be low. The locations of the PRFs are identified on the 2018 aerial photograph on Figure 10 in Appendix A, and on the Site Geologic Map provided in Appendix C. Color photos of the project site and some of the PRFs are included in Appendix B.

- PRFs #S-1, #S-2 and #S-3 are manmade features in bedrock. The PRFs are manhole covers associated with a City of San Antonio storm water utility observed in the northern portion of the project site along Bulverde Road. The three manhole covers were located adjacent to each other within a large concrete slab. The concrete slab was approximately 13 feet wide and 19 feet long. Frost GeoSciences, Inc. rates the relative infiltration of the features as low on figure 1 of the TCEQ-0585-Instructions (Rev. 10-01-04). The features score a 35 on the sensitivity scale, column 10 of the Geologic Assessment Table included within the Attachments at the end of this report. Frost GeoSciences, Inc. does not consider these manmade features to be sensitive.

The project site is covered by moderately dense to dense stand of vegetative cover with a few open grassy areas. Site visit photos indicating the condition of the property at the time of the on-site inspection are included in Appendix B. Overall vegetation on the project site consists of ashe juniper *(Juniperus ashei)*, live oak *(Quercus virginiana)*, and Texas persimmon *(Diospyros texana)*, with agarita *(Berberis trifoliolata)*, yucca *(Yucca treculeana)*, and prickly pear cactus *(Opuntia lindheimeri)*. The variations in the vegetative cover on the property are visible in the 2018 aerial photo on Figures 9 and 10 in Appendix A. A copy of the site layout indicating the boundary of the project site and the elevations is included on the Site Geologic Map in Appendix C of this report.

According to the U.S. Geological Survey, Geologic Framework and Hydrostratigraphy of the Edwards and Trinity Aquifers within Northern Bexar and Comal Counties, Texas, Science Investigations Map 3366, the project site is located on the Dolomitic Member of the Cretaceous Edwards Kainer Limestone (Kkd).

- The Dolomitic Member of the Edwards Kainer Limestone consists of mudstone to grainstone with crystalline limestone and chert. This member is massively bedded and light gray with abundant fossils of Toucasia. Karst features within this member are typically related to structure or bedding planes. Overall thickness ranges from 110 to 130 feet.

A copy of the U.S. Geological Survey, Geologic Framework and Hydrostratigraphy of the Edwards and Trinity Aquifers within Northern Bexar and Comal Counties, Texas, Science Investigations Map 3366 is included on Figure 8 in Appendix A. A copy of the Stratigraphic Column highlighting the outcropping formations is included on Page 3 of this report.

According to the site plan provided by Westwood Professional Services, the surveyed elevations on the project site range from 1157 to 1178 feet. According to this survey, the total relief on the project site is approximately 21 feet. A copy of the site plan indicating the boundary of the project site and the elevations is included on the Site Plan on Figure 1 in Appendix A and the Site Geologic Map in Appendix C of this report.

BEST MANAGEMENT PRACTICES

Based on a visual inspection of the ground surface, the overall potential for fluid flow from the project site into the Edwards Aquifer appears to range from low to moderate. The potential always exists to encounter solution cavities within the subsurface during excavating activities. Frost GeoSciences, Inc. is of the opinion that it is very important for construction personnel to be informed of the potential to encounter cavities in the subsurface that lack a surface expression. Construction personnel should also be informed of the proper protocol to follow in the event a karst feature is encountered during the development of the project site.

DISCLAIMER

This report has been prepared in general accordance with the "Instructions to Geologists", TCEQ-0585-Instructions (Rev. 10-1-04) by a Licensed Texas Professional Geoscientist. All areas of the project site were carefully inspected for features that could contribute to the recharge of the Edwards Aquifer; however, this survey cannot preclude the presence of subsurface karst features that lack surface expression. This report is not intended to be a definitive investigation of all possible geologic or karst features at this site. All conclusions, opinions, and recommendations for Best Management Practices (BMP's) in this report are based on information obtained while researching the project and on the site conditions at the time of our field investigation.

This report has been prepared for the exclusive use of Westwood Professional Services. This report is based on available known records, a visual inspection of the project site, and the work generally accepted for a Geologic Assessment for Regulated Activities / Developments on the Edwards Aquifer Recharge / Transition Zone, relating to 30 TAC §213.5(b)(3), effective June 1, 1999.

REFERENCES

1. USGS - 7.5 Minute Topographic Quadrangle of Bulverde, Texas, 1988

2. E.A.A. Edwards Aquifer Recharge Zone and Contributing Zone Map, Bulverde, Texas (2014).

3. Official Edwards Aquifer Recharge Zone Map, Bulverde, Texas, 1988

4. The Texas Commission on Environmental Quality (TCEQ) website: Edwards Aquifer Viewer – https://tceq.maps.arcgis.com/apps/webappviewer/index.html.

5. Clark, A.K., Golab, J.A. and Morris, R.R., 2016, Geologic Framework and Hydrostratigraphy of the Edwards and Trinity Aquifers within Northern Bexar and Comal Counties, Texas, Science Investigations Map 3366, United States Geological Survey.

6. Clark, A.K., Golab, J.A. and Morris, R.R., 2016, Geologic Framework and Hydrostratigraphy of the Edwards and Trinity Aquifers within Northern Bexar and Comal Counties, Texas, United States Geological Survey.

7. Collins, Edward, W., 2000, Geologic Map of the New Braunfels 30 X 60 Minute Quadrangle, Bureau of Economic Geology, The University of Texas at Austin, Texas.

8. Stein, W.G. and Ozuna, G.B., 1995, Geologic Framework and Hydrogeologic Characteristics of the Edwards Aquifer Recharge Zone, Bexar County, Texas, U.S. Geological Survey Water Resources Investigations 95-4030.

9. Barnes, V.L., 1982, Geologic Atlas of Texas San Antonio Sheet, Bureau of Economic Geology and University of Texas at Austin, Geologic Atlas of Texas.

10. Federal Emergency Management Agency, Federal Insurance Administration, National Flood Insurance Program, Flood Insurance Map, Community Panel Number 48029C0130G, dated September 29, 2010

11. United States Department of Agriculture Soil Conservation Service Soil Survey of Bexar County 1966.

12. USDA NRCS Web Soil Survey (WSS) website: https://websoilsurvey.nrcs.usda.gov (2014)

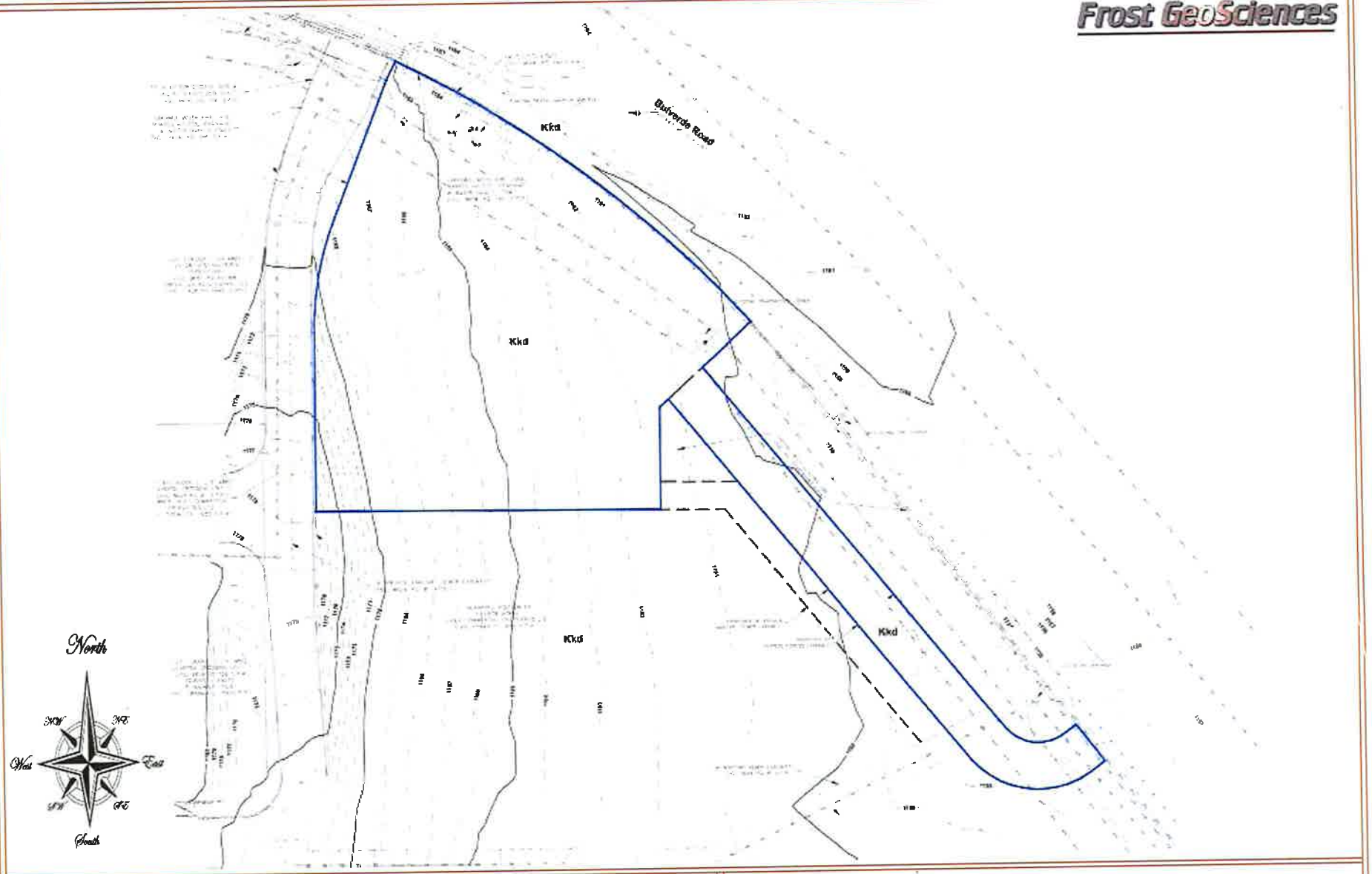
13. TCEQ-0585-Instructions (Rev. 10-1-04), "Instructions to Geologists for Geologic Assessments on the Edwards Aquifer Recharge/Transition Zone".

14. San Antonio Water Systems, Bexar County Watersheds Map, 2004.

APPENDIX A

SITE LOCATION FIGURES

Frost GeoSciences

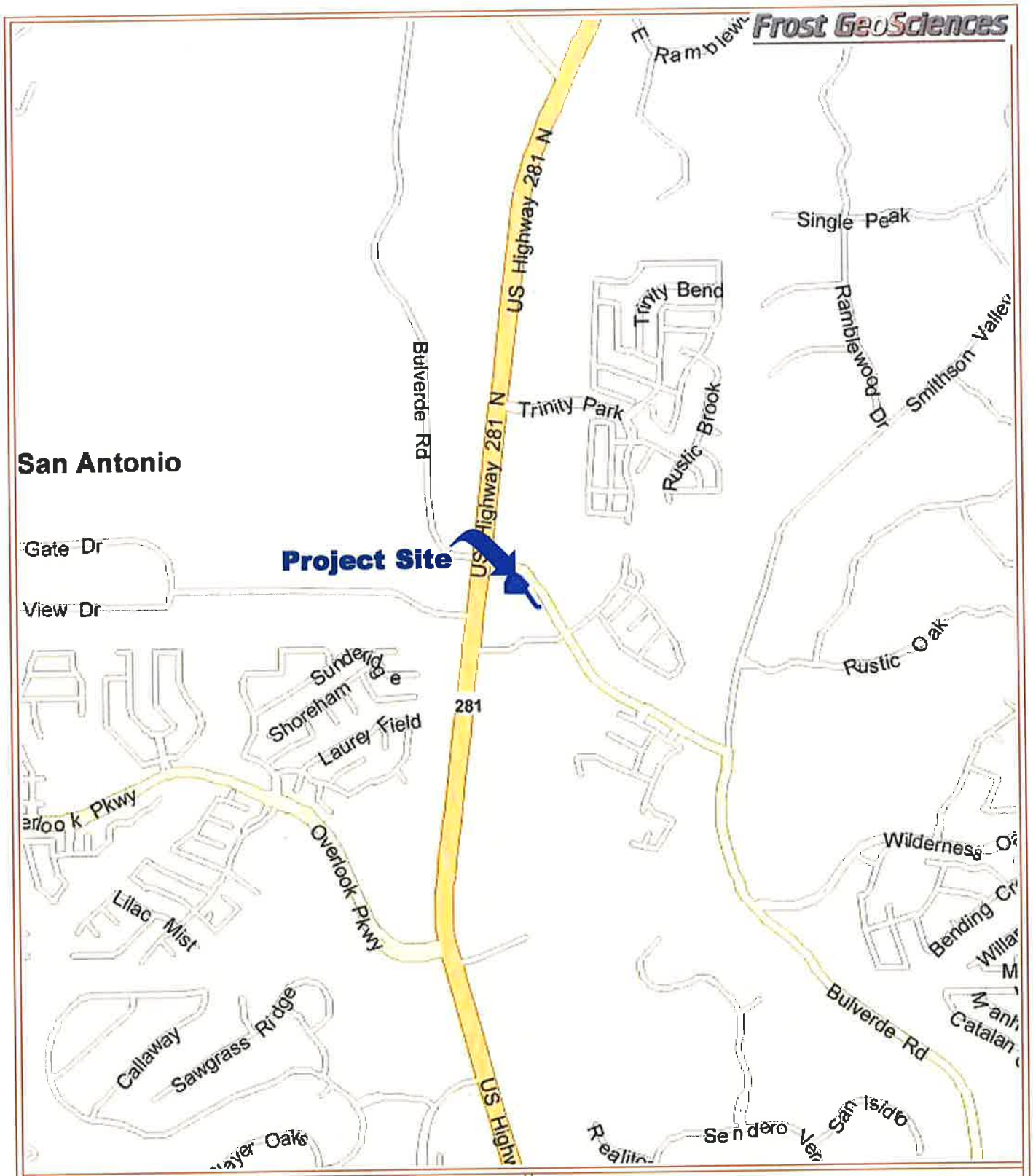


PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Auto Zone Store #M659
San Antonio, Texas

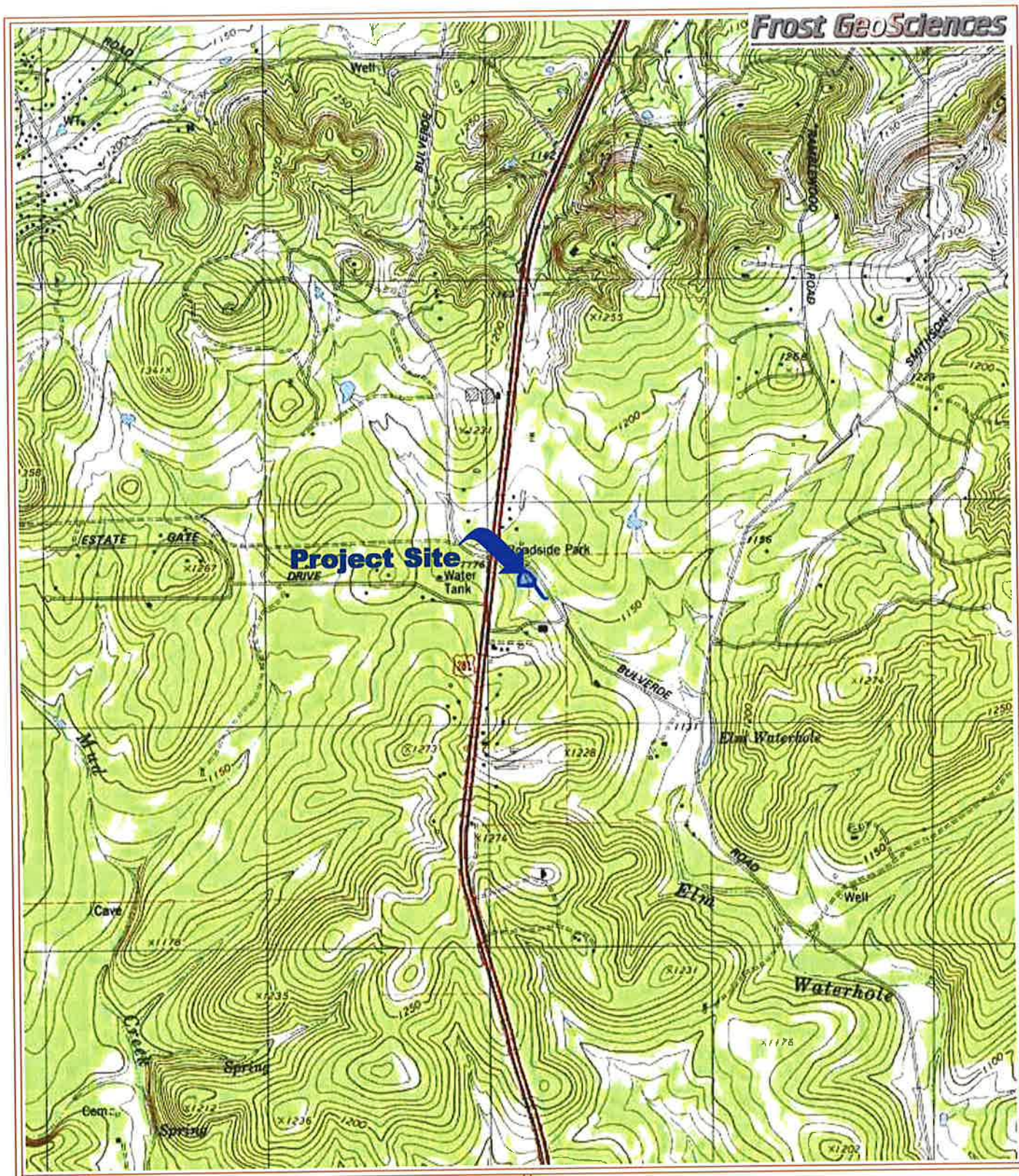
Site Layout

PROJECT NO.: FGS-E19234

DATE: September 25, 2019



PROJECT NAME: Geologic Site Assessment (WPAP) for Regulated Activities / Development on the Edwards Aquifer Recharge / Transition Zone Auto Zone Store #M659 San Antonio, Texas	Street Map
PROJECT NO.: FGS-E19234	**DATE:** September 25, 2019



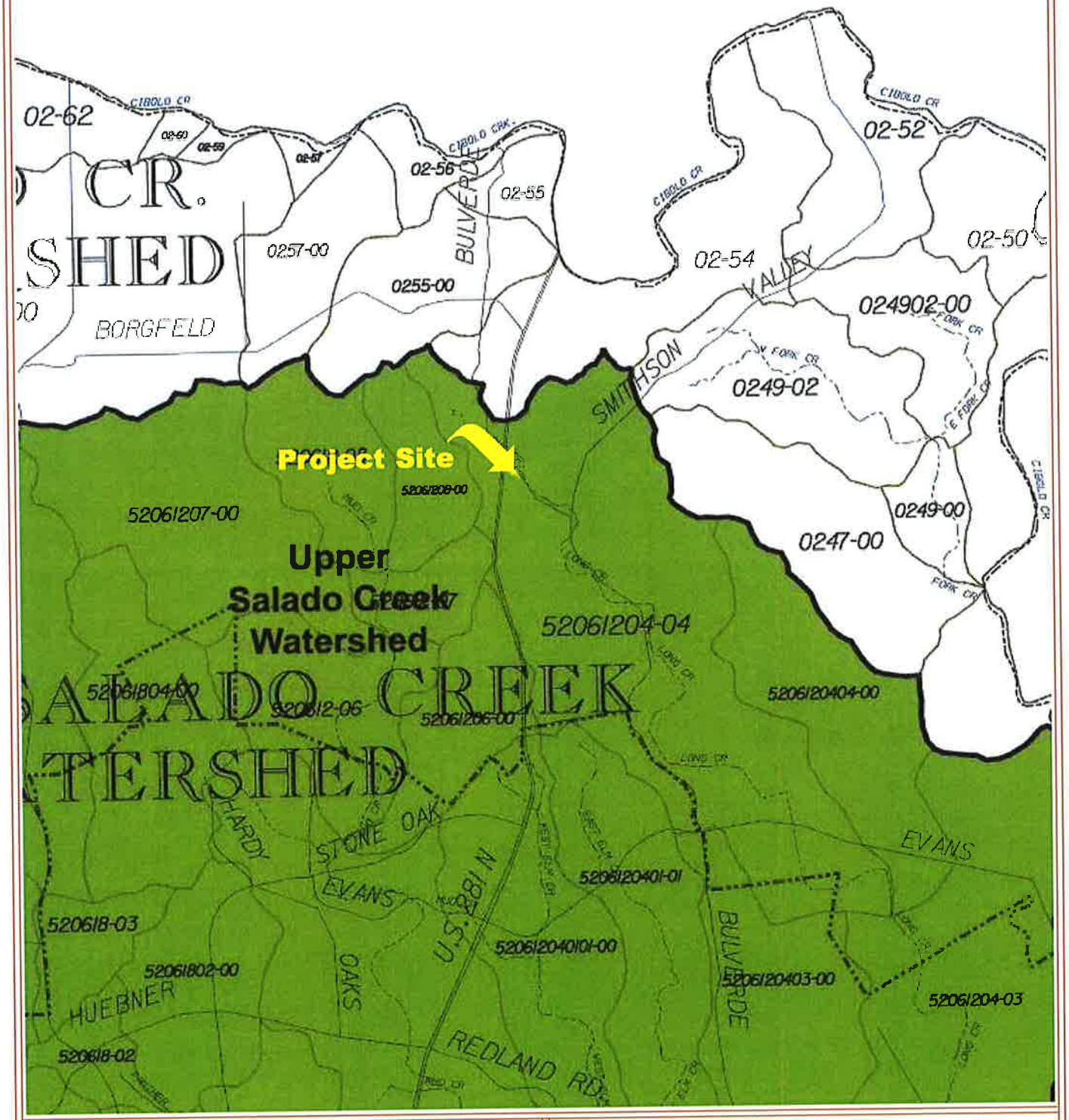
PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Auto Zone Store #M659
San Antonio, Texas

U.S.G.S. 7.5 Minute Quadrangle Map
Bulverde, Texas Sheet (1988)

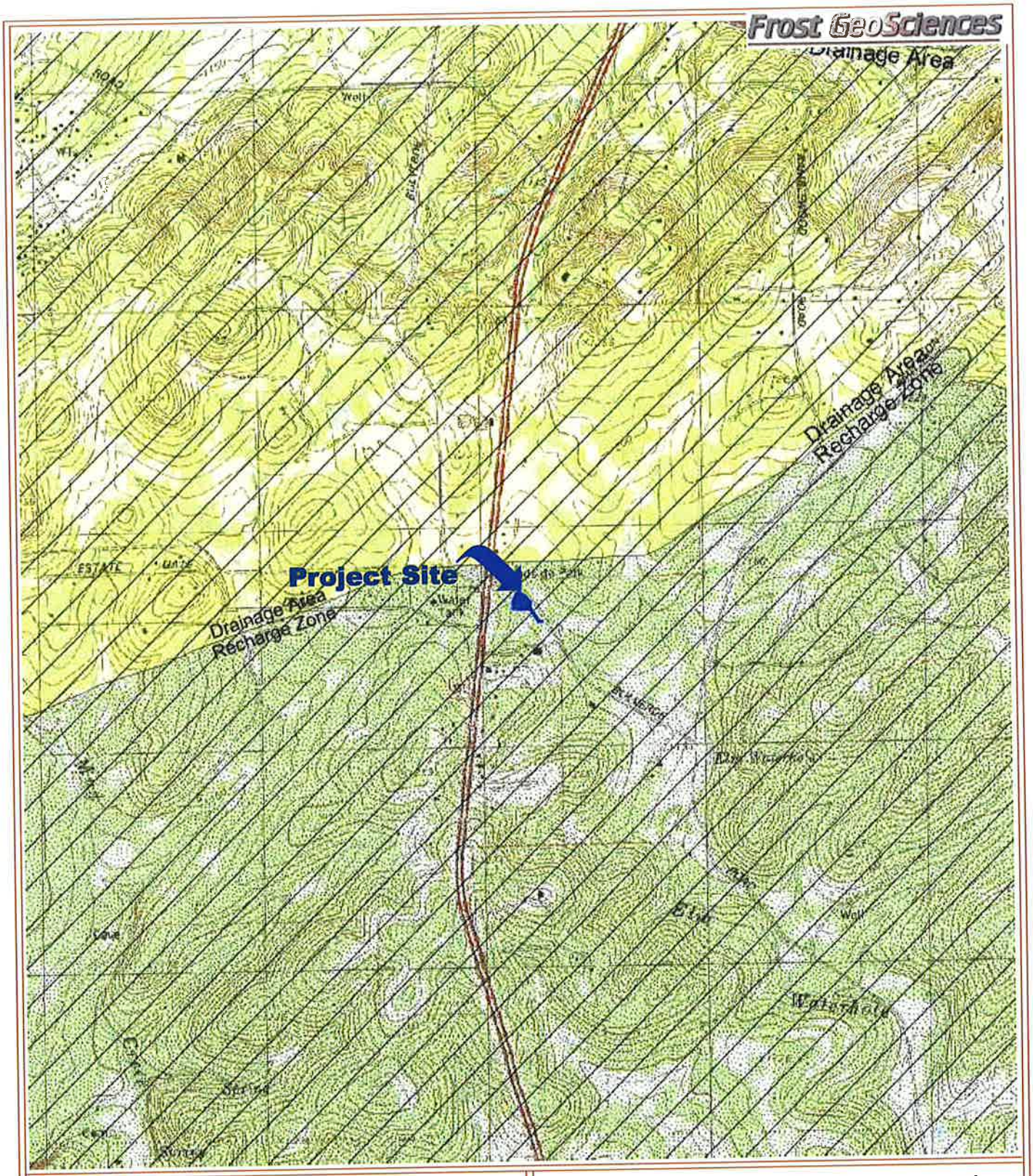
PROJECT NO.: FGS-E19234

DATE: September 25, 2019

Frost GeoSciences



PROJECT NAME:	Bexar County Watersheds Map San Antonio Water Systems (2004)	
Geologic Site Assessment (WPAP) for Regulated Activities / Development on the Edwards Aquifer Recharge / Transition Zone Auto Zone Store #M659 San Antonio, Texas	PROJECT NO.: FGS-E19234	DATE: September 25, 2019

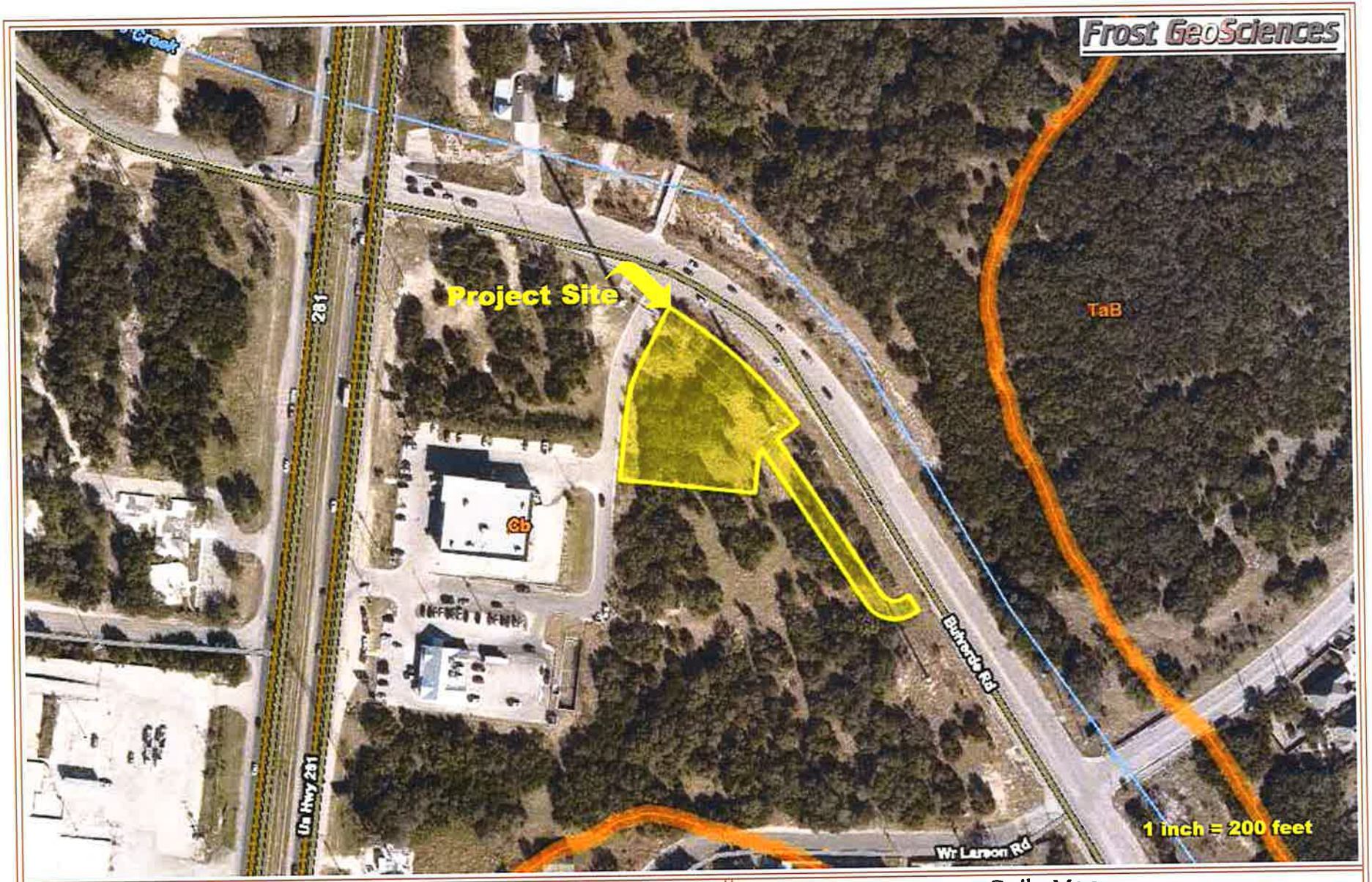


PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Auto Zone Store #M659
San Antonio, Texas

EAA - Edwards Aquifer Recharge and Contributing Zone Map,
Bulverde, Texas Quadrangle (2014)

PROJECT NO.: FGS-E19234

DATE: September 25, 2019

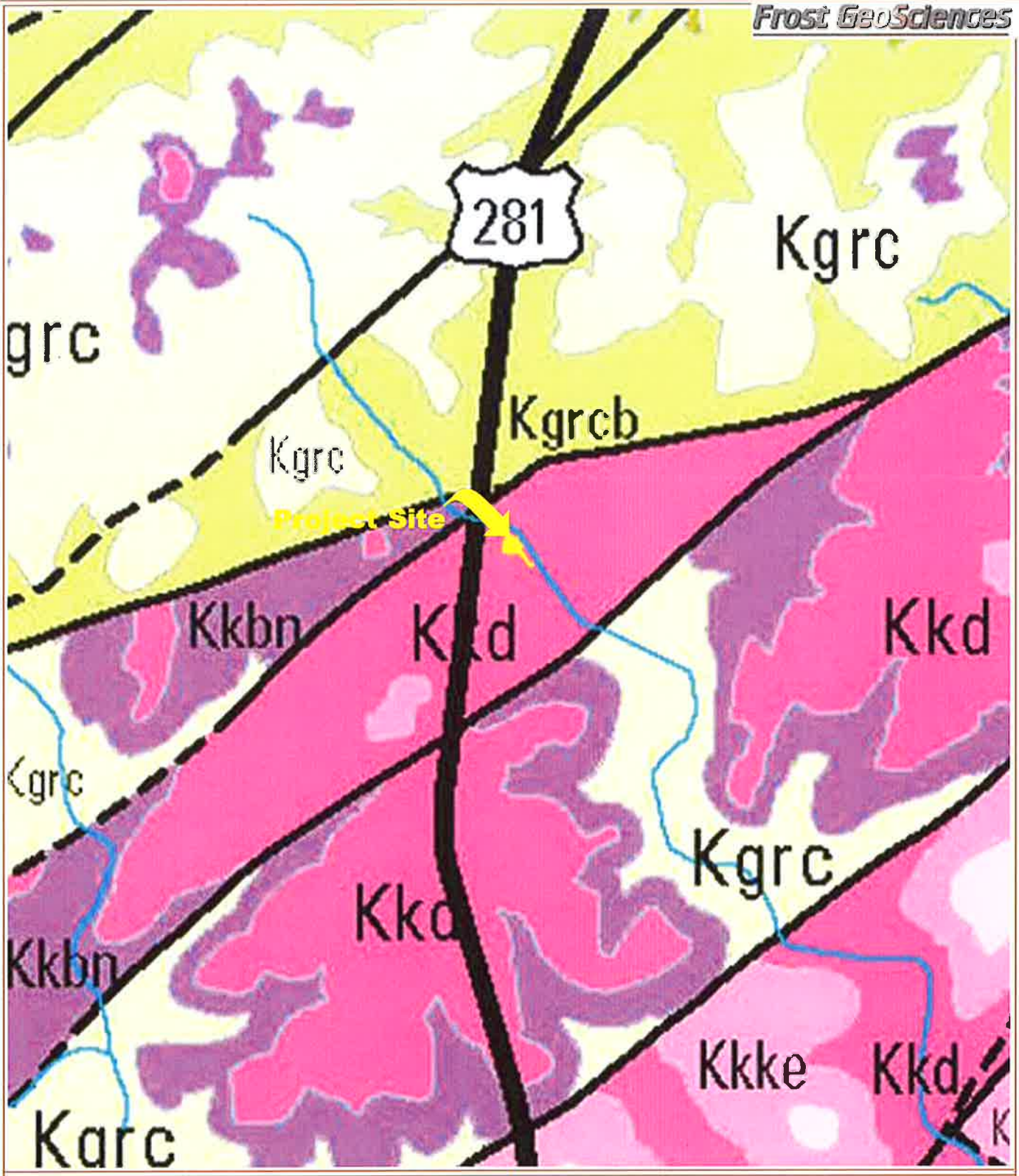


PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Auto Zone Store #M659
San Antonio, Texas

Soils Map
NRCS Web Soil Survey: Bexar County, Texas
website: websoilsurvey.nrcs.usda.gov

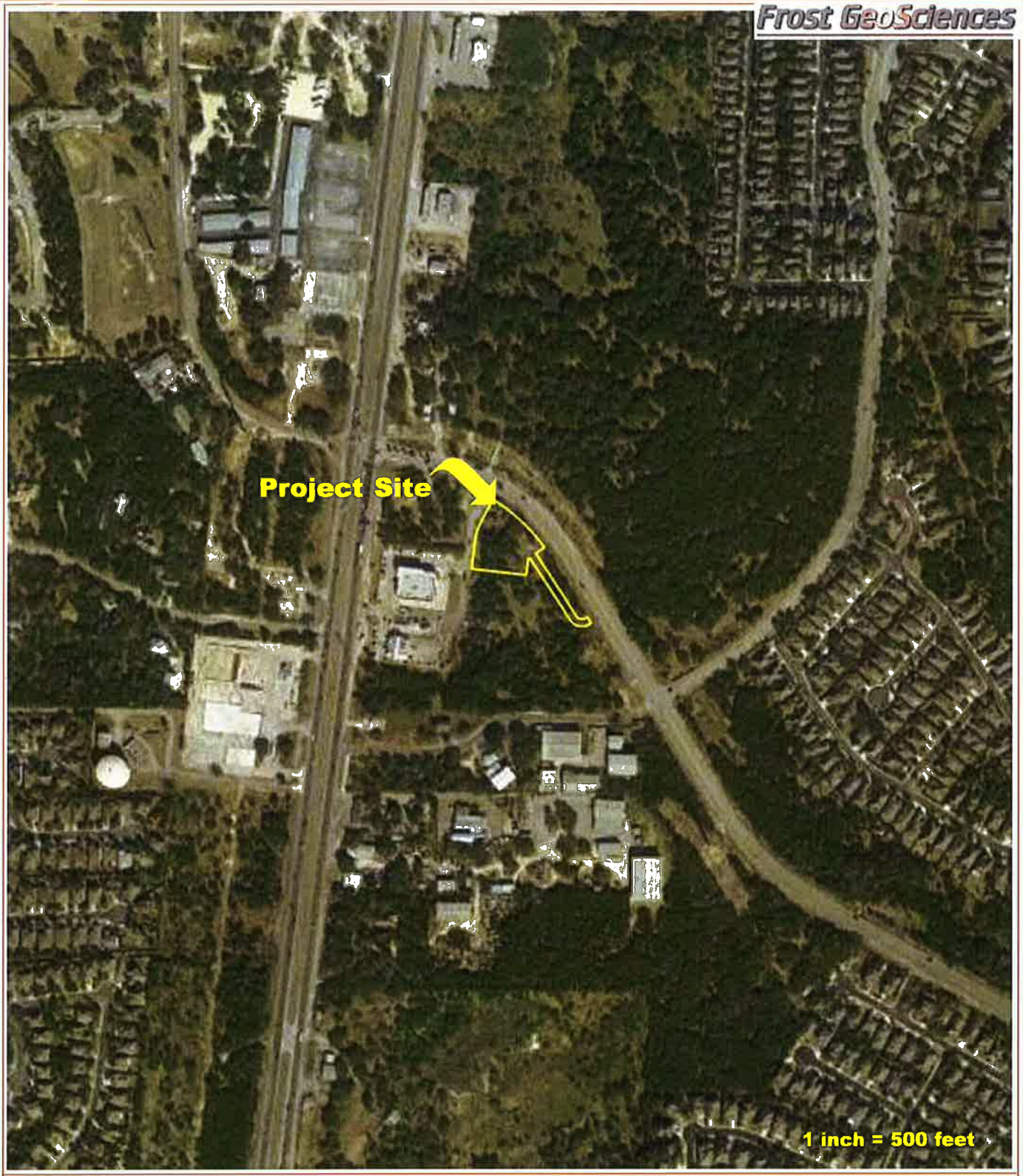
PROJECT NO.: FGS-E19234

DATE: September 25, 2019



PROJECT NAME: Geologic Site Assessment (WPAP) for Regulated Activities / Development on the Edwards Aquifer Recharge / Transition Zone Auto Zone Store #M659 San Antonio, Texas	United States Geologic Survey Scientific Investigations Map 3366 2016
PROJECT NO.: FGS-E19234	**DATE:** September 25, 2019

Frost GeoSciences

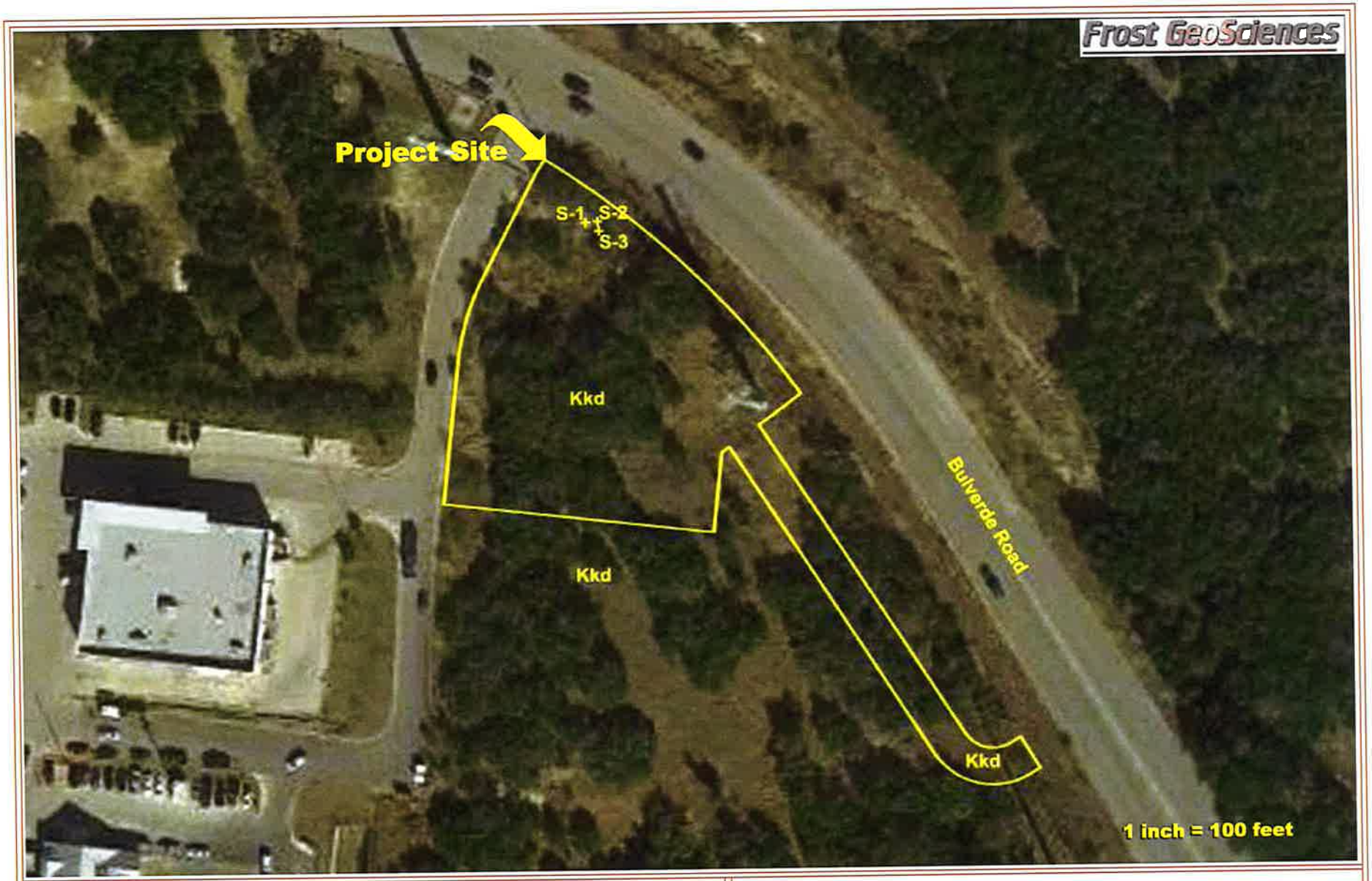


PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Auto Zone Store #M659
San Antonio, Texas

2018 Aerial Photograph
Google Earth

PROJECT NO.: FGS-E19234

DATE: September 25, 2019



PROJECT NAME:
Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
Auto Zone Store #M659
San Antonio, Texas

2018 Aerial Photograph with PRFs
Google Earth

PROJECT NO.: FGS-E19234

DATE: September 25, 2019

APPENDIX B

SITE PHOTOGRAPHS

Photo #1 – View of the vegetative cover observed in the northern portion of the project Site.

Photo #2 – View of the vegetative cover observed in the central portion of the project site.

Photo #3 – View of the vegetative cover observed in the eastern portion of the project site.

Photo #4 – View of the vegetative cover observed in the western portion of the project site.

Photo #5 – View of the vegetative cover observed along the ingress/egress right of way.

Photo #6 – An additional view of the vegetative cover observed along the ingress/egress right of way.

Photo #7 – View of PRF #S-1.

Photo #8 – View of PRF #S-2.

Photo #9 – View of PRF #S-3.

Photo #10 – View of the concrete slab containing the observed PRFs.

ATTACHMENTS

GEOLOGIC FORM TCEQ 0585

STRATIGRAPHIC COLUMN

GEOLOGIC ASSESSMENT TABLE

SITE GEOLOGIC MAP

GEOLOGIC FORM TCEQ 0585

FGS Project Nº FGS-E19234

Geologic Assessment

Texas Commission on Environmental Quality

For Regulated Activities on The Edwards Aquifer Recharge/transition Zones and Relating to 30 TAC §213.5(b)(3), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Print Name of Geologist: Chris Wickman

Telephone: (210) 372-1515

Date: September 25, 2019

Fax: (210) 372-1318

Representing: Frost Geosciences, Inc. Firm Registration #50040 (Name of Company and TBPG or TBPE registration number)

Signature of Geologist:

Christopher J. Wickman Geology 10403 LICENSED

Regulated Entity Name: AutoZone Store #M659

Project Information

1. Date(s) Geologic Assessment was performed: September 24, 2019
2. Type of Project:
   - ☒ WPAP
   - ☐ SCS
   - ☐ AST
   - ☐ UST
3. Location of Project:
   - ☒ Recharge Zone
   - ☐ Transition Zone
   - ☐ Contributing Zone within the Transition Zone

4. ☒ **Attachment A - Geologic Assessment Table**. Completed Geologic Assessment Table (Form TCEQ-0585-Table) is attached.

5. ☒ Soil cover on the project site is summarized in the table below and uses the SCS Hydrologic Soil Groups* (Urban Hydrology for Small Watersheds, Technical Release No. 55, Appendix A, Soil Conservation Service, 1986). If there is more than one soil type on the project site, show each soil type on the site Geologic Map or a separate soils map.

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)
Crawford and Bexar	D	0-1

** Soil Group Definitions (Abbreviated)*

A. Soils having a high infiltration rate when thoroughly wetted.
B. Soils having a moderate infiltration rate when thoroughly wetted.
C. Soils having a slow infiltration rate when thoroughly wetted.
D. Soils having a very slow infiltration rate when thoroughly wetted.

6. ☒ **Attachment B – Stratigraphic Column**. A stratigraphic column showing formations, members, and thicknesses is attached. The outcropping unit, if present, should be at the top of the stratigraphic column. Otherwise, the uppermost unit should be at the top of the stratigraphic column.

7. ☒ **Attachment C – Site Geology**. A narrative description of the site specific geology including any features identified in the Geologic Assessment Table, a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure(s), and karst characteristics is attached.

8. ☒ **Attachment D – Site Geologic Map(s)**. The Site Geologic Map must be the same scale as the applicant's Site Plan. The minimum scale is 1": 400'

   Applicant's Site Plan Scale: 1" = 20'
   Site Geologic Map Scale: 1" = 20'
   Site Soils Map Scale (if more than 1 soil type): 1" = 200'

9. Method of collecting positional data:

   ☒ Global Positioning System (GPS) technology.
   ☒ Other method(s). Please describe method of data collection: 2018 Aerial

10. ☒ The project site and boundaries are clearly shown and labeled on the Site Geologic Map.

11. ☒ Surface geologic units are shown and labeled on the Site Geologic Map.

12. ☒ Geologic or manmade features were discovered on the project site during the field investigation. They are shown and labeled on the Site Geologic Map and are described in the attached Geologic Assessment Table.

    ☐ Geologic or manmade features were not discovered on the project site during the field investigation.

13. ☒ The Recharge Zone boundary is shown and labeled, if appropriate.

14. All known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.): If applicable, the information must agree with Item No. 20 of the WPAP Application Section.

    ☐ There are _____ (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)
    - ☐ The wells are not in use and have been properly abandoned.
    - ☐ The wells are not in use and will be properly abandoned.
    - ☐ The wells are in use and comply with 16 TAC Chapter 76.

    ☒ There are no wells or test holes of any kind known to exist on the project site.

Administrative Information

15. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

STRATIGRAPHIC COLUMN

FGS Project Nº FGS-E19234

STRATIGRAPHIC COLUMN

EXPLANATION OF HYDROSTRATIGRAPHIC UNITS

Group or Formation	Formal and informal member		Hydrologic unit or Informal hydrostratigraphic unit
Taylor Group (Pecan Gap)		Kpg	Upper Confining Unit (UCU)
Austin Group		Ka	
Eagle Ford Group		Kef	
Buda Limestone		Kb	
Del Rio Clay		Kdr	
Georgetown Formation		Kg	I
Person Formation	Cyclic and marine, undivided	Kpcm	II
	Leached and collapsed	Kplc	III
	Regional dense member	Kprd	IV
Kainer Formation	Grainstone	Kkg	V
	Kirschberg evaporite	Kkke	VI
	Dolomitic	Kkd	VII
	Basal nodular	Kkbn	VIII
Glen Rose Limestone	Upper Glen Rose Limestone	Kgrc	Cavernous
		Kgrcb	Camp Bullis
		Kgrue	Upper evaporite
		Kgruf (Kgrf)	Fossiliferous Upper
		Kgrlf (Kgrf)	Fossiliferous Lower
		Kgrle	Lower evaporite
	Lower Glen Rose Limestone	Kgrb	Bulverde
		Kgrlb	Little Blanco
		Kgrts	Twin Sisters
		Kgrd	Doeppenschmidt
		Kgrr	Rust
		Kgrhc	Honey Creek
Pearsall Formation	Hensell Sand	Kheh	Hensell
	Cow Creek Limestone	Kcccc	Cow Creek
	Hammett Shale	Khah	Hammett

FGS Project Nº FGS-E19234

GEOLOGIC ASSESSMENT TABLE

FGS Project Nº FGS-E19234

Frost GeoSciences

GEOLOGIC ASSESSMENT TABLE

PROJECT NAME: Auto Zone Store #M659 | **PROJECT NUMBER: FGS-E19234**

LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
						X	Y	Z		10						<40	>40	<1.6	>1.6	
S-1	29° 41' 34.5"	-98° 27' 2.16"	MB	30	Kkd	2	2	?	-	-	-	-	X	5	35	35		YES		HILLSIDE
S-2	29° 41' 34.44"	-98° 27' 2.1"	MB	30	Kkd	2	2	?	-	-	-	-	X	5	35	35		YES		HILLSIDE
S-3	29° 41' 34.44"	-98° 27' 2.04	MB	30	Kkd	2	2	?	-	-	-	-	X	5	35	35		YES		HILLSIDE

Datum: NAD 83

2A TYPE	TYPE	2B POINTS
C	Cave	30
SC	Solution cavity	20
SF	Solution-enlarged fracture(s)	20
F	Fault	20
O	Other natural bedrock features	5
MB	Manmade feature in bedrock	30
SW	Swallow hole	30
SH	Sinkhole	20
CD	Non-karst closed depression	5
Z	Zone, clustered or aligned features	30

8A INFILLING	
N	None, exposed bedrock
C	Coarse - cobbles, breakdown, sand, gravel
O	Loose or soft mud or soil, organics, leaves, sticks, dark colors
F	Fines, compacted clay-rich sediment, soil profile, gray or red colors
V	Vegetation. Give details in narrative description
FS	Flowstone, cements, cave deposits
X	Other materials

12 TOPOGRAPHY
Cliff, Hilltop, Hillside, Floodplain, Streambed

I have read, I understood, and I have followed the Texas Commission on Environmental Quality's Instructions to Geologists.
The information presented here complies with that document and is a true representation of the conditions observed in the field.
My signature certifies that I am qualified as a geologist as defined by 30 TAC 213.

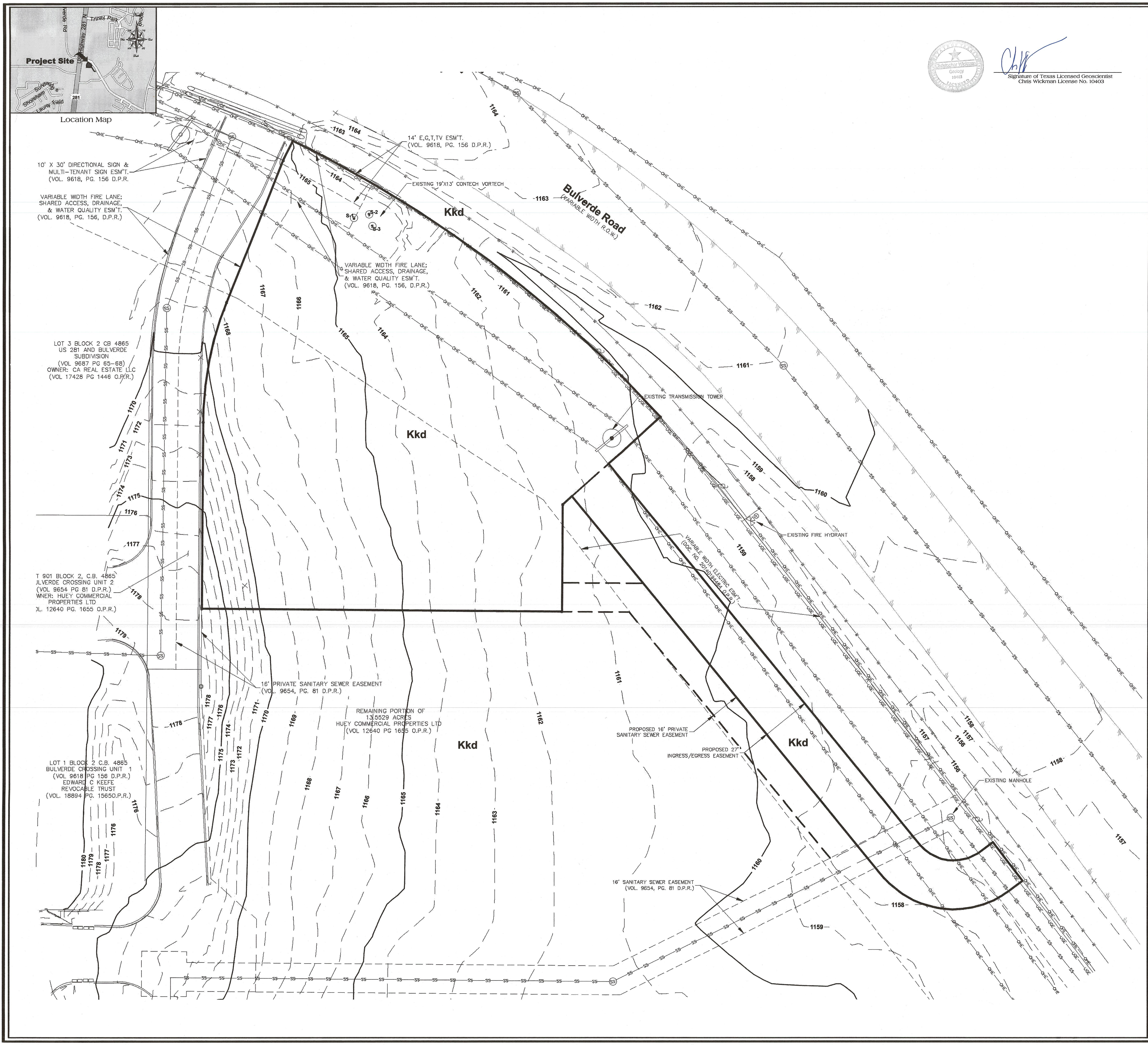
Christopher Wickman
Geology
10403
LICENSED

Chris Wickman, P.G.

Date: September 25, 2019

TCEQ-0585-Table (Rev. 10-01-04)

FGS Project Nº FGS-E19234



Project Site
Location Map
Trinity Park
US Highway 281 N
Bulverde Rd
Shoreham
Sunderland
Laurel Field
281
Brook
Signature of Texas Licensed Geoscientist
Chris Wickman License No. 10403
Christopher Wickman
Geology
10403
LICENSED
Bulverde Road
(VARIABLE WIDTH R.O.W.)
14' E,G,T,TV ESM'T.
(VOL. 9618, PG. 156 D.P.R.)
EXISTING 19'X13' CONTECH VORTECH
10' X 30' DIRECTIONAL SIGN &
MULTI-TENANT SIGN ESM'T.
(VOL. 9618, PG. 156 D.P.R.)
VARIABLE WIDTH FIRE LANE;
SHARED ACCESS, DRAINAGE,
& WATER QUALITY ESM'T.
(VOL. 9618, PG. 156, D.P.R.)
Kkd
S-1
S-2
S-3
LOT 3 BLOCK 2 CB 4865
US 281 AND BULVERDE
SUBDIVISION
(VOL 9687 PG 65-68)
OWNER: CA REAL ESTATE LLC
(VOL 17428 PG 1446 O.P.R.)
EXISTING TRANSMISSION TOWER
EXISTING FIRE HYDRANT
VARIABLE WIDTH ELECTRIC ESM'T.
(DOC. NO. 20140194484 O.P.R.)
16' PRIVATE SANITARY SEWER EASEMENT
(VOL. 9654, PG. 81 D.P.R.)
REMAINING PORTION OF
13.5529 ACRES
HUEY COMMERCIAL PROPERTIES LTD
(VOL 12640 PG 1655 O.P.R.)
LOT 1 BLOCK 2 C.B. 4865
BULVERDE CROSSING UNIT 1
(VOL 9618 PG 156 D.P.R.)
EDWARD C KEEFE
REVOCABLE TRUST
(VOL. 18894 PG. 15650.P.R.)
PROPOSED 16' PRIVATE
SANITARY SEWER EASEMENT
PROPOSED 27'
INGRESS/EGRESS EASEMENT
16' SANITARY SEWER EASEMENT
(VOL. 9654, PG. 81 D.P.R.)
EXISTING MANHOLE

Frost GeoSciences
Geotechnical ▪ Construction Materials
Geologic ▪ Environmental
13406 Western Oak ▪ Helotes, Texas 78023
Phone: (210) 372-1315 ▪ Fax: (210) 372-1318

Site Geologic Map

Geologic Site Assessment (WPAP)
for Regulated Activities / Development on the
Edwards Aquifer Recharge / Transition Zone
for the

Auto Zone Store #M659
+/- 1 Acre
San Antonio, Texas

Frost GeoSciences, Inc. Control # FGS-E19234

Legend

Kkd - Edwards Kainer Dolomitic limestone
S-# - Potential Recharge Feature (PRF)

Floodplain Information Obtained From
FIRM: Flood Insurance Rate Map
Bexar County, Texas: Panel # 48029C0130G, Revised 9/29/10

Fault Information Obtained From:
Bureau of Economic Geology, Geologic Atlas of Texas, San Antonio Sheet (1983)
U.S. Geological Survey, Water Resources Investigations Report 95-9030 (1995)
Geologic Map of the New Braunfels, Texas 30 X 60 Minute Quadrangle (2000)
U.S. Geological Survey Geologic Framework and Hydrostratigraphy of the Edwards and Trinity Aquifers within Northern Bexar and Comal Counties, Texas (2016)

North
South
East
West

Graphic Scale
20 0 10 20 40
(In Feet)

1 inch = 20 feet
Representative Fraction 1:240

Contour Interval - 1 feet

WPAP Application

TCEQ - 0584

Water Pollution Abatement Plan Application

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(b), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Water Pollution Abatement Plan Application Form** is hereby submitted for TCEQ review and Executive Director approval. The form was prepared by:

Print Name of Customer/Agent: Yen W. Lai, P.E.

Date: 01/22/2020

Signature of Customer/Agent:

Regulated Entity Name: AutoZone TX5196

Regulated Entity Information

1. The type of project is:

   - ☐ Residential: Number of Lots:_____
   - ☐ Residential: Number of Living Unit Equivalents:_____
   - ☑ Commercial
   - ☐ Industrial
   - ☐ Other:_____

2. Total site acreage (size of property): 1.27
3. Estimated projected population: 10
4. The amount and type of impervious cover expected after construction are shown below:

Table 1 - Impervious Cover Table

Impervious Cover of Proposed Project	Sq. Ft.	Sq. Ft./Acre	Acres
Structures/Rooftops	6,796	÷ 43,560 =	0.16
Parking	15,093	÷ 43,560 =	0.35
Other paved surfaces	13,686	÷ 43,560 =	0.32
Total Impervious Cover	35,575	÷ 43,560 =	0.82

Total Impervious Cover 0.82 **÷ Total Acreage** 1.27 **X 100 =** 64.2 **% Impervious Cover**

5. ☑ **Attachment A - Factors Affecting Surface Water Quality**. A detailed description of all factors that could affect surface water and groundwater quality that addresses ultimate land use is attached.

6. ☑ Only inert materials as defined by 30 TAC §330.2 will be used as fill material.

For Road Projects Only

Complete questions 7 - 12 if this application is exclusively for a road project.

7. Type of project:

   ☐ TXDOT road project.
   ☐ County road or roads built to county specifications.
   ☐ City thoroughfare or roads to be dedicated to a municipality.
   ☐ Street or road providing access to private driveways.

8. Type of pavement or road surface to be used:

   ☐ Concrete
   ☐ Asphaltic concrete pavement
   ☐ Other: _____

9. Length of Right of Way (R.O.W.): _____ feet.

   Width of R.O.W.: _____ feet.
   L x W = _____ Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.

10. Length of pavement area: _____ feet.

    Width of pavement area: _____ feet.
    L x W = _____ Ft^2 ÷ 43,560 Ft^2/Acre = _____ acres.
    Pavement area _____ acres ÷ R.O.W. area _____ acres x 100 = _____% impervious cover.

11. ☐ A rest stop will be included in this project.

    ☐ A rest stop will not be included in this project.

12. ☐ Maintenance and repair of existing roadways that do not require approval from the TCEQ Executive Director. Modifications to existing roadways such as widening roads/adding shoulders totaling more than one-half (1/2) the width of one (1) existing lane require prior approval from the TCEQ.

Stormwater to be generated by the Proposed Project

13. ☑ **Attachment B - Volume and Character of Stormwater**. A detailed description of the volume (quantity) and character (quality) of the stormwater runoff which is expected to occur from the proposed project is attached. The estimates of stormwater runoff quality and quantity are based on the area and type of impervious cover. Include the runoff coefficient of the site for both pre-construction and post-construction conditions.

Wastewater to be generated by the Proposed Project

14. The character and volume of wastewater is shown below:

100 % Domestic	240 Gallons/day
_____% Industrial	_____Gallons/day
_____% Commingled	_____Gallons/day
TOTAL gallons/day _____	

15. Wastewater will be disposed of by:

☐ On-Site Sewage Facility (OSSF/Septic Tank):

- ☐ **Attachment C - Suitability Letter from Authorized Agent**. An on-site sewage facility will be used to treat and dispose of the wastewater from this site. The appropriate licensing authority's (authorized agent) written approval is attached. It states that the land is suitable for the use of private sewage facilities and will meet or exceed the requirements for on-site sewage facilities as specified under 30 TAC Chapter 285 relating to On-site Sewage Facilities.
- ☐ Each lot in this project/development is at least one (1) acre (43,560 square feet) in size. The system will be designed by a licensed professional engineer or registered sanitarian and installed by a licensed installer in compliance with 30 TAC Chapter 285.

☑ Sewage Collection System (Sewer Lines):

- ☑ Private service laterals from the wastewater generating facilities will be connected to an existing SCS.
- ☐ Private service laterals from the wastewater generating facilities will be connected to a proposed SCS.
- ☑ The SCS was previously submitted on 10/23/2012
- ☐ The SCS was submitted with this application.
- ☐ The SCS will be submitted at a later date. The owner is aware that the SCS may not be installed prior to Executive Director approval.

☑ The sewage collection system will convey the wastewater to the Steven M. Clouse Water Recycling Center Treatment Plant. The treatment facility is:

☑ Existing.
☐ Proposed.

16. ☑ All private service laterals will be inspected as required in 30 TAC §213.5.

Site Plan Requirements

Items 17 – 28 must be included on the Site Plan.

17. ☑ The Site Plan must have a minimum scale of 1" = 400'.

Site Plan Scale: 1" = 20 '.

18. 100-year floodplain boundaries:

☐ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.
☑ No part of the project site is located within the 100-year floodplain.
The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): _____

19. ☑ The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. Lots, recreation centers, buildings, roads, open space, etc. are shown on the plan.

☐ The layout of the development is shown with existing contours at appropriate, but not greater than ten-foot intervals. Finished topographic contours will not differ from the existing topographic configuration and are not shown. Lots, recreation centers, buildings, roads, open space, etc. are shown on the site plan.

20. All known wells (oil, water, unplugged, capped and/or abandoned, test holes, etc.):

☐ There are _____ (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply)

☐ The wells are not in use and have been properly abandoned.
☐ The wells are not in use and will be properly abandoned.
☐ The wells are in use and comply with 16 TAC §76.

☑ There are no wells or test holes of any kind known to exist on the project site.

21. Geologic or manmade features which are on the site:

☐ All sensitive geologic or manmade features identified in the Geologic Assessment are shown and labeled.
☑ No sensitive geologic or manmade features were identified in the Geologic Assessment.
☐ **Attachment D - Exception to the Required Geologic Assessment**. A request and justification for an exception to a portion of the Geologic Assessment is attached.

22. ☑ The drainage patterns and approximate slopes anticipated after major grading activities.
23. ☑ Areas of soil disturbance and areas which will not be disturbed.
24. ☑ Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.
25. ☑ Locations where soil stabilization practices are expected to occur.
26. ☐ Surface waters (including wetlands).

    ☑ N/A
27. ☐ Locations where stormwater discharges to surface water or sensitive features are to occur.

    ☑ There will be no discharges to surface water or sensitive features.
28. ☑ Legal boundaries of the site are shown.

Administrative Information

29. ☑ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.
30. ☑ Any modification of this WPAP will require Executive Director approval, prior to construction, and may require submission of a revised application, with appropriate fees.

ATTACHMENTS

Attachment A – Factors Affecting Surface Water Quality

Attachment B – Volume and Character of Stormwater

Attachment C – Suitability Letter from Authorized Agent

Attachment D – Exception to Required Geologic Assessment

Attachment E – Site Plan

Attachment A – Factors Affecting Surface Water Quality

The major factors which may affect water quality during construction are:

- Sediment from disturbed soil;
- Sediment from stock piled material;
- Mechanical fluids from construction equipment;
- Trash from workers and material packaging;
- Rinse water from concrete trucks.

The major factors which may affect water quality once development is complete are:

- Automotive fluids;
- Landscape products including fertilizers and herbicides;
- Pest control products.

This is to be dealt with by installing the appropriate temporary/permanent best management practices including silt fencing, curb inlet protection, concrete washout pits, rock berms, permanent sediment basin, trash cans and construction dumpsters. If fuel or a hazardous substance spill occurs, the contaminated soil will be removed and placed in an impervious container to be disposed offsite at an approved disposal location. The placement of excavated materials will have appropriately sized erosion and sedimentation controls placed down gradient and trench spoils will be placed on the up gradient side of the trench.

In addition to the above measures, the following recommended measures from the Edwards Aquifer Technical Guidance Manual (RG-348, 2005), Chapters; 1.4.16, Significant/Hazardous Spills, Section 2.3 Pesticide and Fertilizer Management, 2.4 Housekeeping Practices, and 2.5 Landscaping and Vegetative Practices should also be followed.

Attachment B – Volume and Character of Stormwater

Storm water runoff generated from the proposed site will come from roof tops, driveways and landscaped areas. Runoff will be treated by a Contech Jellyfish Stormwater Treatment, and a natural vegetative filter strip down gradient of the proposed access driveway. No unusual contaminants other than those typical with commercial development are expected.

The storm water runoff for the preconstruction conditions of the approximate 1.21 acre site undeveloped side is currently untreated. The site consists of native vegetation consisting of grasses, brush and trees. The proposed site consists of 7 drainage/catchment areas, of which DA1, DA2, DA4, DA6, and DA7 are treated by proposed BMPs as shown on the Proposed Drainage Plan included in ATTACHMENT G in the TEMPORARY STORMWATER SECTION.

The characteristic of the storm water generated onsite will be influenced by site features that generate non-point sources of pollution. Non-point sources will include: oil and grease from the pavement areas, suspended solids, sedimentation, nutrients for landscape care and maintenance along with the possible use of pesticides, and herbicides. The storm water runoff would discharge into an existing drainage ditch and discharge downstream.

The rational Method (Q=CIA) was used to compute the flow volumes generated by each drainage area. The following methods or values were applied:

Time of concentration (Tc) $\rightarrow$ Time of Concentration derived from Table 5.4.1 - Overland Flow Time and Table 5.4.2 - Average Velocities for Estimating Travel Time for Shallow Concentrated Flow, City of San Antonio Storm Water Design Criteria Manual, Rev. Apr 2019

Intensity (I) $\rightarrow$ Analysis of areas and flows generated involved the use of the City of San Antonio rainfall intensity curves from the Storm Water Design Criteria Manual, Rev. Apr 2019.

Runoff Coefficient (C) $\rightarrow$ Runoff coefficients were taken from the City of San Antonio runoff coefficients from the Storm Water Design Criteria Manual, Rev. Apr 2019.

CEXIST = 0.55 CPROP = 0.80

A summary of the pre-development and ultimate development hydrology is shown on the following page.

HYDROLOGIC CALCULATIONS SUMMARY

RUNOFF CALCULATIONS - EXISTING CONDITIONS

Study Point	Drainage Area	Area (acres)	C	Tc (min)	Intensity, I (in/hr)			Discharge, Q(cfs)		
					5-yr	25-yr	100-yr	5-yr	25-yr	100-yr
1	EX1	1.27	0.55	15.5	5.23	7.27	9.11	3.7	5.1	6.4

** Time of Concentration derived from Table 5.4.1 - Overland Flow Time and Table 5.4.2 - Average Velocities for Estimating Travel Time for Shallow Concentrated Flow, City of San Antonio Storm Water Design Criteria Manual, Rev. Apr 2019*

** Runoff Coefficient (C) derived from Table 5.5.3.A - Runoff Coefficient (C value), City of San Antonio Storm Water Design Criteria Manual, Rev. Apr 2019*

** Rainfall Intensities (I) derived from Table 5.5.1.B, City of San Antonio Storm Water Design Criteria Manual, Rev. Apr 2019*

RUNOFF CALCULATIONS - PROPOSED / ULTIMATE CONDITIONS

Study Point	Drainage Area	Area (acres)	C	Tc (min)	Intensity, I (in/hr)			Discharge, Q(cfs)		
					5-yr	25-yr	100-yr	5-yr	25-yr	100-yr
	DA1	0.038	0.88	5.0	7.94	11.14	14.01	0.3	0.4	0.5
	DA2	0.539	0.91	5.7	7.65	10.71	13.51	3.8	5.3	6.6
	DA3	0.005	0.97	5.0	7.94	11.14	14.01	0.0	0.1	0.1
	DA4	0.193	0.96	5.0	7.94	11.14	14.01	1.5	2.1	2.6
	DA5	0.064	0.55	5.0	7.94	11.14	14.01	0.3	0.4	0.5
	DA6	0.029	0.97	5.0	7.94	11.10	14.01	0.2	0.3	0.4
	DA7	0.404	0.55	15.0	5.32	7.40	9.27	1.2	1.6	2.1
	DA1, 2, 4, 6, 7	1.203	0.80	15.0	5.32	7.40	9.27	5.1	7.1	8.9

** Time of Concentration derived from Table 5.4.1 - Overland Flow Time and Table 5.4.2 - Average Velocities for Estimating Travel Time for Shallow Concentrated Flow, City of San Antonio Storm Water Design Criteria Manual, Rev. Apr 2019*

** Runoff Coefficient (C) derived from Table 5.5.3.A - Runoff Coefficient (C value), City of San Antonio Storm Water Design Criteria Manual, Rev. Apr 2019*

** Rainfall Intensities (I) derived from Table 5.5.1.B, City of San Antonio Storm Water Design Criteria Manual, Rev. Apr 2019*

RUNOFF COEFFICIENTS (C)

PRE-DEVELOPMENT DRAINAGE CALCULATIONS

DRAINAGE AREA	TOTAL ACRES	BUSINESS OR COMMERCIAL (90% OR MORE IMPERVIOUS)				DENSELY DEVELOPED AREAS (80-90% IMPERVIOUS)				CLOSELY BUILT RESIDENTIAL AREA AND SCHOOL SITES				CULTIVATED OR RANGE (GRASS COVER <50% OF AREA)								COMPOSITE RUNOFF COEFFICIENT
		slope (%)				slope (%)				slope (%)				slope (%)								
		0-1	1-3	3-5	>5	0-1	1-3	3-5	>5	0-1	1-3	3-5	>5	0-1	1-3	3-5	>5					
		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
		0.95	0.96	0.97	0.97	0.85	0.88	0.91	0.95	0.75	0.77	0.80	0.84	0.44	0.47	0.53	0.55					
EX1	1.27																1.27					0.55

** Runoff Coefficient (C) derived from Table 5.5.3.A - Runoff Coefficient (C value), City of San Antonio Storm Water Design Criteria Manual, Rev. Apr 2019*

POST-DEVELOPMENT DRAINAGE CALCULATIONS

DRAINAGE AREA	TOTAL ACRES	BUSINESS OR COMMERCIAL (90% OR MORE IMPERVIOUS)				DENSELY DEVELOPED AREAS (80-90% IMPERVIOUS)				CLOSELY BUILT RESIDENTIAL AREA AND SCHOOL SITES				CULTIVATED OR RANGE (GRASS COVER <50% OF AREA)								COMPOSITE RUNOFF COEFFICIENT
		slope (%)				slope (%)				slope (%)				slope (%)								
		0-1	1-3	3-5	>5	0-1	1-3	3-5	>5	0-1	1-3	3-5	>5	0-1	1-3	3-5	>5					
		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C					
		0.95	0.96	0.97	0.97	0.85	0.88	0.91	0.95	0.75	0.77	0.80	0.84	0.44	0.47	0.53	0.55					
DA1	0.038			0.030												0.008						0.88
DA2	0.539		0.484												0.055							0.91
DA3	0.005			0.005																		0.97
DA4	0.193		0.193																			0.96
DA5	0.064																0.064					0.55
DA6	0.029				0.029																	0.97
DA7	0.404			0.018												0.386						0.55
DA1, 2, 4, 6, 7	1.203		0.677	0.048	0.029										0.055	0.394						0.80

** Runoff Coefficient (C) derived from Table 5.5.3.A - Runoff Coefficient (C value), City of San Antonio Storm Water Design Criteria Manual, Rev. Apr 2019*

TIME OF CONCENTRATIONS (Tc)

PRE-DEVELOPMENT DRAINAGE CALCULATIONS

DA/ STUDY POINTS	Overland			Shallow Concentrated (P = Paved, UP = Unpaved)					Street				Channel / Drain Pipe				Tc
	length	slope	travel time*	type	length	slope	velocity **	travel time	length	slope	velocity	travel time	length	slope	velocity	travel time	(min)
	(ft)	(ft/ft)	(min)	P / UP	(ft)	(ft/ft)	(ft/sec)	(min)	(ft)	(ft/ft)	(ft/sec)	(min)	(ft)	(ft/ft)	(ft/sec)	(min)	
EX1	282	0.060	**15.5**														**15.5**

** Time of Concentration derived from Table 5.4.1 - Overland Flow Time and Table 5.4.2 - Average Velocities for Estimating Travel Time for Shallow Concentrated Flow, City of San Antonio Storm Water Design Criteria Manual, Rev. Apr 2019*

POST-DEVELOPMENT DRAINAGE CALCULATIONS

DA/ STUDY POINTS	Overland			Shallow Concentrated (P = Paved, UP = Unpaved)					Street				Channel / Drain Pipe				Tc (min)
	length	slope	travel time*	type	length	slope	velocity **	travel time	length	slope	velocity	travel time	length	slope	velocity	travel time	
	(ft)	(ft/ft)	(min)	P / UP	(ft)	(ft/ft)	(ft/sec)	(min)	(ft)	(ft/ft)	(ft/sec)	(min)	(ft)	(ft/ft)	(ft/sec)	(min)	
DA1	87	0.071	**5.0**														**5.0**
DA2	300	0.036	**5.5**	P	43	0.050	4.6	**0.2**									**5.7**
DA3	61	0.044	**5.0**														**5.0**
DA4	249	0.027	**5.0**														**5.0**
DA5	45	0.171	**5.0**														**5.0**
DA6	33	0.057	**5.0**														**5.0**
DA7	163	0.033	**14.2**	UP	132	0.033	2.9	**0.8**									**15.0**

** Time of Concentration derived from Table 5.4.1 - Overland Flow Time and Table 5.4.2 - Average Velocities for Estimating Travel Time for Shallow Concentrated Flow, City of San Antonio Storm Water Design Criteria Manual, Rev. Apr 2019*

Attachment C – Suitability Letter from Authorized Agent

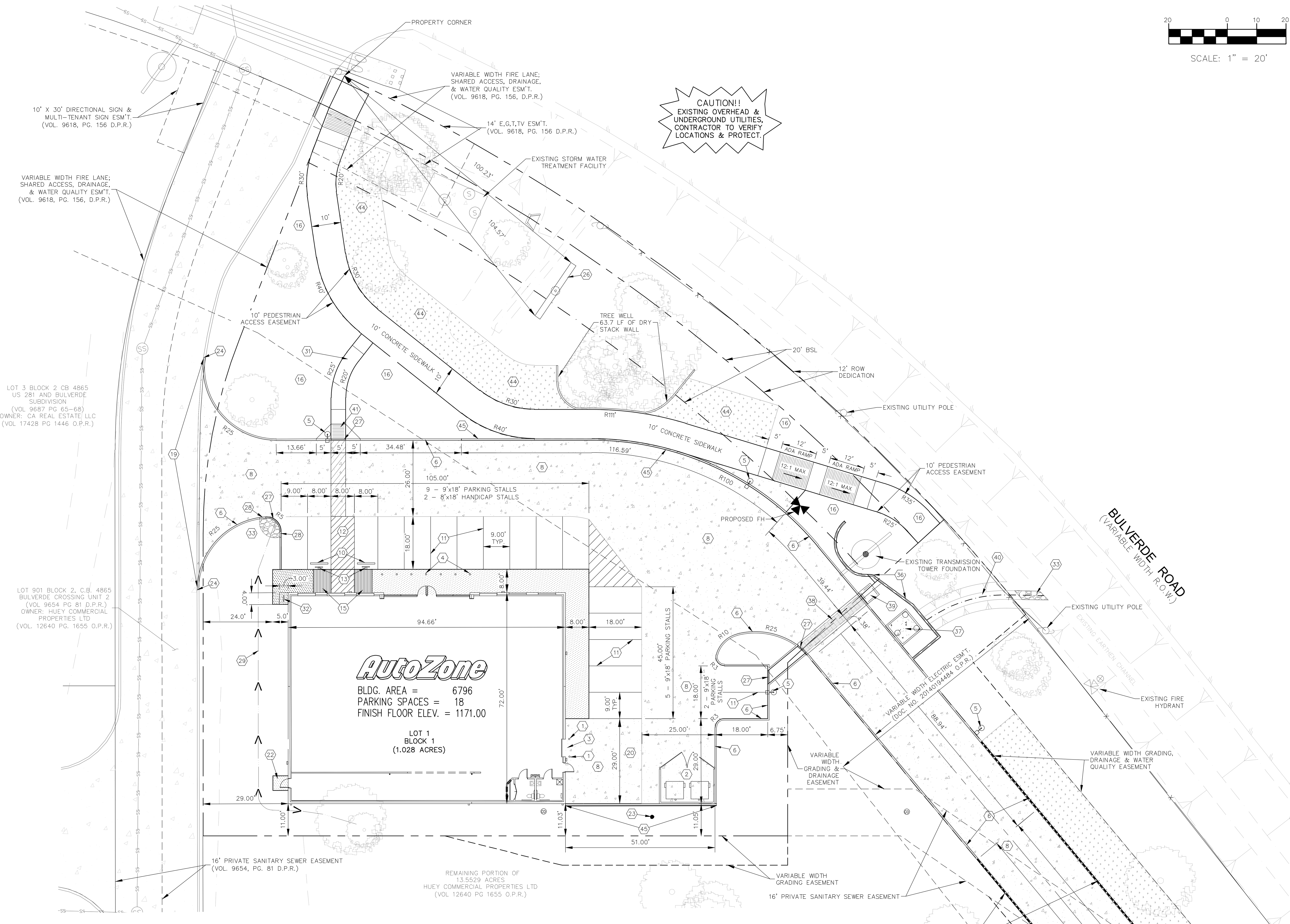
Not Applicable - No on-site sewer facility (OSSF/Septic) is proposed for this project.

Attachment D – Exception to Required Geologic Assessment

No exception to geologic assessment is request. Please see previous section, "Geologic Assessment" Form (TCEQ-0585) for a complete assessment of the site geology.

Attachment E – Site Plan

A 1”=20’ scaled site plan on 24” x 36” sheet is provided in the following pocket.



TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

EXISTING UTILITIES

THE LOCATION OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL VERIFY THE EXACT LOCATION PRIOR TO COMMENCING WORK AND IS RESPONSIBLE FOR ANY/ALL DAMAGES RESULTING FROM THEIR FAILURE TO LOCATE AND PRESERVE ANY/ALL UTILITIES.

CONTRACTOR NOTE

PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL REQUEST PROJECT CONTROL POINTS TO ESTABLISH CONSTRUCTION SITE FROM SURVEYOR OF RECORD.

LEGEND

- EXISTING EDGE OF ASPHALT
- EXISTING 8" SANITARY SEWER
- EXISTING OVERHEAD ELECTRIC
- EXISTING UNDERGROUND ELECTRIC
- EXISTING 24" WATER MAIN
- EXISTING CHAINLINK FENCE
- EXISTING EARTHEN LOW
- EXISTING SANITARY SEWER MANHOLE
- EXISTING STORM DRAIN MANHOLE
- REINFORCED CONCRETE PIPE
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING UTILITY POLE
- EXISTING GUY WIRE
- EXISTING SIGN
- PROPOSED SANITARY SEWER
- PROPOSED UNDERGROUND ELECTRIC
- PROPOSED WATER SERVICE
- BOUNDARY LINE
- PROPOSED HEADER CURB
- PROPOSED SAWTOOTH CURB
- SITE KEYNOTE
- CONCRETE PAVEMENT
- ASPHALT PAVEMENT

KEYNOTES

BUILDING & PAVING

1. PIPE GUARD – SEE DETAILS 16 / C1.A
2. DUMPSTER LAYOUT – SEE DETAILS 8,9,10, & 11/ C1.A
3. SERVICE DOOR PLAN – SEE DETAIL 15/ C1.A
4. BOLLARD PLAN – SEE DETAIL 14/ C1.A
5. CONCRETE LIGHT POLE BASE – SEE DETAIL 13/ C1.A AIM LIGHT FIXTURE IN DIRECTION AS INDICATED.
6. CURB & GUTTER @ CONCRETE PAVING – SEE DETAIL 1 / C1.A
7. SLOPE END OF CURB 4:1
8. CONCRETE PAVING – SEE DETAIL 4, SHEET C1.A EXPANSION AND CONTROL JOINTS – SEE DETAILS 23 & 24, SHEET C1.A. MAXIMUM SPACING FOR CONTROL JOINTS IS 15' O.C. EACH WAY.
9. ASPHALT PAVEMENT – SEE DTL. 2 & 3, SHEET C1.A
10. 6'-0" LONG CONCRETE WHEEL STOP PINNED TO PAVEMENT (TYPICAL). LOCATE 3'-6" FROM FACE OF CURB OR SIDEWALK SEE DETAIL 17 / C1.A
11. 4" WIDE PARKING STRIPE PAINTED WHITE (TYP.)
12. 4" WIDE DIAGONAL STRIPES PAINTED WHITE AT 2 FT. O.C.
13. HANDICAP PARKING SIGN – SEE DETAIL 12/ C1.A G.C. TO PROVIDE ONE VAN ACCESSIBLE SIGN.
14. CONCRETE SIDEWALK – SEE DETAIL 22/ C1.A FOR SIDEWALKS AROUND BUILDING
15. ACCESSIBLE RAMP – SEE DETAIL 6 & 19 /C1.A – MAX. SLOPE 1:12 (8.33%) , MAX. CROSS SLOPE 1:50 (2.00%) TRUNCATED DOME TO BE A CONTRASTING COLOR. FOR SIDEWALK IN ROW, SEE DETAIL THIS SHEET.
16. NEW LANDSCAPE AREA – PROVIDE 3" TOPSOIL & SOD. SEE SHEET L1.0 FOR ADDITIONAL INFORMATION
17. EXISTING CURB TO REMAIN
18. PROPOSED STORMWATER INLET. SEE SHEET C1.1 FOR ADDITIONAL INFORMATION. (NOT USED)
19. CONTRACTOR TO MATCH EXISTING PAVEMENT AND/OR CURB WITH PROPOSED PAVEMENT AND/OR CURB
20. LOADING AREA: SLOPE AT MAX. 2.5% AWAY FROM BUILDING.
21. CONCRETE DRIVEWAY. SEE DETAIL SHEET C1.B
22. 5' X 5' CONCRETE PAD
23. FREEZELESS YARD HYDRANT – SEE DETAIL 4 SHEET M2
24. MATCH EXISTING CURB
25. SAWTOOTH CURB – SEE DETAIL SHEET C1.B
26. PROPOSED SIGN: 6'-9" X 21'-11 1/4" PYLON SIGN 22'-0" OVERALL HEIGHT
27. PROPOSED HEADER CURB – SEE DETAIL SHEET C1.B
28. PROPOSED 2' CURB TRANSITION – SEE DETAIL SHEET C1.B
29. PROPOSED SWALE
30. HEAVY CONCRETE PAVING – SEE DETAIL 4, SHEET C1.A EXPANSION AND CONTROL JOINTS – SEE DETAILS 23 & 24, SHEET C1.A. MAXIMUM SPACING FOR CONTROL JOINTS IS 15' O.C. EACH WAY.
31. PROPOSED 5' SIDEWALK WITH A MAXIMUM 2% CROSS SLOPE. – SEE CONCRETE SIDEWALK DETAIL SHEET C1.B
32. BIKE RACK – SEE DETAIL SHEET C1.B
33. 4" TO 6" BULL ROCK @ 1.5" DEPTH
34. CONCRETE SIDEWALK DRAIN – SEE DETAIL SHEET C1.B
35. ACCESSIBLE RAMP – SEE DETAIL SHEET C1.B – MAX. SLOPE 1:12 (8.33%) MAX. CROSS SLOPE 1:50 (2.00%)
36. PROPOSED STRUCTURAL RETAINING WALL – SEE STRUCTURAL PLANS FOR DETAILS
37. PROPOSED STORM WATER TREATMENT FACILITY – SEE SHEET C1.2 FOR DETAILS
38. PROPOSED TRENCH DRAIN – SEE SHEET C1.2 FOR DERAILS
39. PROPOSED 4'x4' JUNCTION BOX – SEE SHEET C1.2 FOR DETAILS
40. PROPOSED EARTHEN CHANNEL – SEE SHEET C1.2 FOR DETAILS
41. PROPOSED FLARED WHEEL CHAIR RAMP – SEE DETAIL SHEET C1.B
42. PROPOSED CONCRETE BOX CULVERT – SEE SHEET C1.2A & C1.2B FOR DETAILS
43. PROPOSED CONCRETE HEADWALL – SEE SHEET C1.2C FOR DETAILS
44. PROPOSED ENGINEERING FILTER STRIP – SEE SHEET C1.5 FOR DETAIL
45. PROPOSED EXTENDED CURB – SEE DETAIL SHEET C1.B
46. METAL BEAM GUARD FENCE – SEE DETAIL SHEET C1.2C

GENERAL NOTES

1. PROOF ROLL BUILDING AND ALL PARKING AREAS. NOTIFY THE ARCHITECT OF ANY UNACCEPTABLE AREAS.
2. EDGE OF NEW PAVEMENT TO BE FLUSH WITH EXISTING PAVEMENT.
3. ALL SIDEWALK CURB AND GUTTER STREET PAVING, CURB CUTS, DRIVEWAY APPROACHES, HANDICAP RAMP, ETC. CONSTRUCTED OUTSIDE THE PROPERTY LINE IN THE RIGHT-OF-WAY SHALL CONFORM TO ALL MUNICIPAL AND/OR STATE SPECIFICATIONS AND REQUIREMENTS.
4. FOR AREAS OUTSIDE THE PROPERTY LINES, REPAIR AND/OR REPLACE ALL DAMAGE DONE TO EXISTING ELEMENTS (SIDEWALKS, PAVING, LANDSCAPING, ETC.) AS REQUIRED BY OWNER AND/OR GOVERNING AUTHORITY.
5. FOR PROPOSED UTILITY LOCATIONS, SEE THE UTILITY PLAN.

FOR CONTROL POINTS AND BENCHMARKS REFERENCE AUTOZONE STORE #M659 SAN ANTONIO, TEXAS ALTA/NSPS TITLE SURVEY PROVIDED BY KFW ENGINEERING PRIOR TO CONSTRUCTION

GENERAL NOTES

1. CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNERS AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF THE WORK ON THIS PROJECT, EXCEPTING FROM LIABILITY ARISING FROM SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.
2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL MAKE CERTAIN THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER DOCUMENTS APPROVED BY ALL OF THE PERMITTING AUTHORITIES.
3. CONTRACTOR SHALL COMPLY WITH **THE CITY OF SAN ANTONIO** STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, ALL OTHER APPLICABLE BUILDING CODES AND REGULATIONS, AS WELL AS OTHER SAFETY CODES AND INSPECTION PROVISIONS APPLICABLE TO THIS PROJECT.
4. BARRICADES AND WARNING SIGNS SHALL CONFORM TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND GENERALLY BE LOCATED TO AFFORD MAXIMUM PROTECTION TO THE PUBLIC AS WELL AS CONSTRUCTION PERSONNEL AND EQUIPMENT AND TO ASSURE AN EXPEDITIOUS TRAFFIC FLOW AT ALL TIMES DURING CONSTRUCTION. DURING THE PROGRESS OF THE WORK THE CONTRACTOR SHALL PROVIDE ACCESS FOR LOCAL TRAFFIC.
5. CONTRACTOR IS REQUIRED TO VERIFY PROJECT ELEVATIONS. "MATCH EXISTING" SHALL BE UNDERSTOOD TO SIGNIFY VERTICAL AND HORIZONTAL ALIGNMENT.
6. EXISTING ABOVE GROUND UTILITIES HAVE BEEN PLOTTED BY DIRECT FIELD INVESTIGATION. UNDERGROUND UTILITIES HAVE BEEN COMPILED FROM VARIOUS SOURCES AND REQUIRE VERIFICATION BY THE CONTRACTOR TO ESTABLISH THEIR EXACT LOCATION AND DEPTH. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO EXISTING ABOVE GROUND OR UNDERGROUND UTILITIES, INCLUDING THOSE NOT SHOWN ON DRAWINGS. DEAD UTILITY LINES SHALL BE SUITABLY CAPPED AT CONTRACTOR'S EXPENSE.
7. THE INFORMATION CONTAINED ON THESE DRAWINGS IN REGARDS TO EXISTING UTILITIES, TOPOGRAPHY, CONTOURS, HYGROGRAPH, OR SUBSURFACE CONDITIONS IS FURNISHED SOLELY AS THE BEST INFORMATION AVAILABLE AT THIS TIME. ITS ACCURACY IS NOT GUARANTEED AND ITS USE IN NO WAY RELIEVES THE CONTRACTOR OF ANY RESPONSIBILITY FOR DAMAGE DUE TO ANY INACCURACIES.
8. ANY EXISTING OFF-SITE IMPROVEMENTS OR UTILITY REMOVED, DAMAGED OR UNDERCUT BY CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE ENGINEER AND APPROVED BY THE RESPECTIVE UTILITY AT THE CONTRACTOR'S EXPENSE.
9. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING EXISTING FACILITIES FROM DAMAGE AND COST OF REPAIR TO EXISTING FACILITIES AND IMPROVEMENTS AS A RESULT OF CONTRACTOR'S WORK. THE CONTRACTOR SHALL NOTIFY ALL UTILITY OFFICES 48 HOURS PRIOR TO STARTING WORK AND SHALL COORDINATE THEIR WORK WITH THE UTILITY OFFICES.
10. DURING CONSTRUCTION, THE OWNER WILL PROVIDE A GEOTECHNICAL LAB TO PERFORM MATERIALS TESTING DURING THE CONSTRUCTION. RETESTS REQUIRED DUE TO CONTRACTOR PERFORMANCE SHALL BE PAID BY THE CONTRACTOR.
11. THE CONTRACTOR SHALL KEEP AND LEAVE THE AREA NEAT AND CLEAN DURING CONSTRUCTION. DEBRIS SHALL NOT BE BURIED OR DUMPED ANYWHERE WITHIN THE LIMITS OF THE PROJECT. ALL DEBRIS, CONSTRUCTION MATERIALS, CONTRACTOR'S BUILDINGS OR EQUIPMENT, LOGS, STUMPS, BOULDERS, OR ANY OTHER EXTRANEOUS MATERIAL DEPOSITED DURING CONSTRUCTION SHALL BE DISPOSED OFFSITE PROMPTLY IN COMPLIANCE WITH APPLICABLE REGULATIONS.
12. ANY EXISTING PAVEMENT, CURBS AND/OR SIDEWALKS DAMAGED OR REMOVED WILL BE REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.
13. ALL UNDERGROUND FACILITIES SHALL BE CONSTRUCTED, CONNECTED AND TESTED PRIOR TO THE CONSTRUCTION OF SURFACE IMPROVEMENTS, SUCH AS SIDEWALKS, CURBS, GUTTERS AND PAVING.
14. ALL SURVEY MONUMENTS DISTURBED DURING CONSTRUCTION SHALL BE REPLACED BY A LICENSED SURVEYOR AND PAID FOR BY THE CONTRACTOR.
15. THE CONTRACTOR SHALL KEEP THE APPROVED SET OF PLANS ON SITE AT ALL TIMES. THE CONTRACTOR SHALL REDLINE THE ACTUAL LOCATIONS AND DIMENSIONS (VERTICAL/HORIZONTAL) OF UTILITIES, STRUCTURES, SERVICES, AND OTHER DETAILS DEFERRING FROM OR NOT SHOWN ON THE ORIGINAL DRAWINGS. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL SUBMIT THE RECORD DRAWINGS TO THE ENGINEER OF RECORD.
16. THE CONTRACTOR IS RESPONSIBLE FOR RESTORING TO ITS ORIGINAL OR BETTER CONDITION ANY DAMAGE DONE TO EXISTING FENCES, CURBS, STREETS, SIGNS, DRIVEWAYS, LANDSCAPING AND STRUCTURES.
17. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, THE GAS PURVEYOR MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND GAS VALVES THAT ARE IN THE PROJECT AREA.
18. MATERIAL SPECIFICATIONS:
    CONCRETE/CONCRETE RIPRAP: CLASS A 3000 PSI IN 28 DAYS UNLESS OTHERWISE NOTED ON PLANS
    REINFORCING STEEL: CONFORM TO A.S.T.M. A-615, GRADE 60 (2" COVER UNLESS OTHERWISE NOTED ON PLANS)
    PIPE RAILING: CONFORM TO A.S.T.M. A-53, GRADE B, OR A-501
    STRUCTURAL STEEL: CONFORM TO A.S.T.M. A-36
19. THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL WASTE MATERIALS UPON PROJECT COMPLETION. NO WASTE MATERIAL SHALL BE PERMANENTLY PLACED IN THE 100-YEAR FLOOD PLAIN WITHOUT FIRST OBTAINING THE NECESSARY PERMITS.
20. THE CONTRACTOR SHALL PROVIDE TEMPORARY SEDIMENTATION AND EROSION CONTROLS AS REQUIRED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) AND/OR AS INDICATED ON THE PLANS. UPON FINAL STABILIZATION OF DISTURBED AREAS AND FINAL ACCEPTANCE OF THE PROJECT; ALL TEMPORARY CONTROLS SHALL BE REMOVED BY CONTRACTOR.

SITE PLAN NOTES

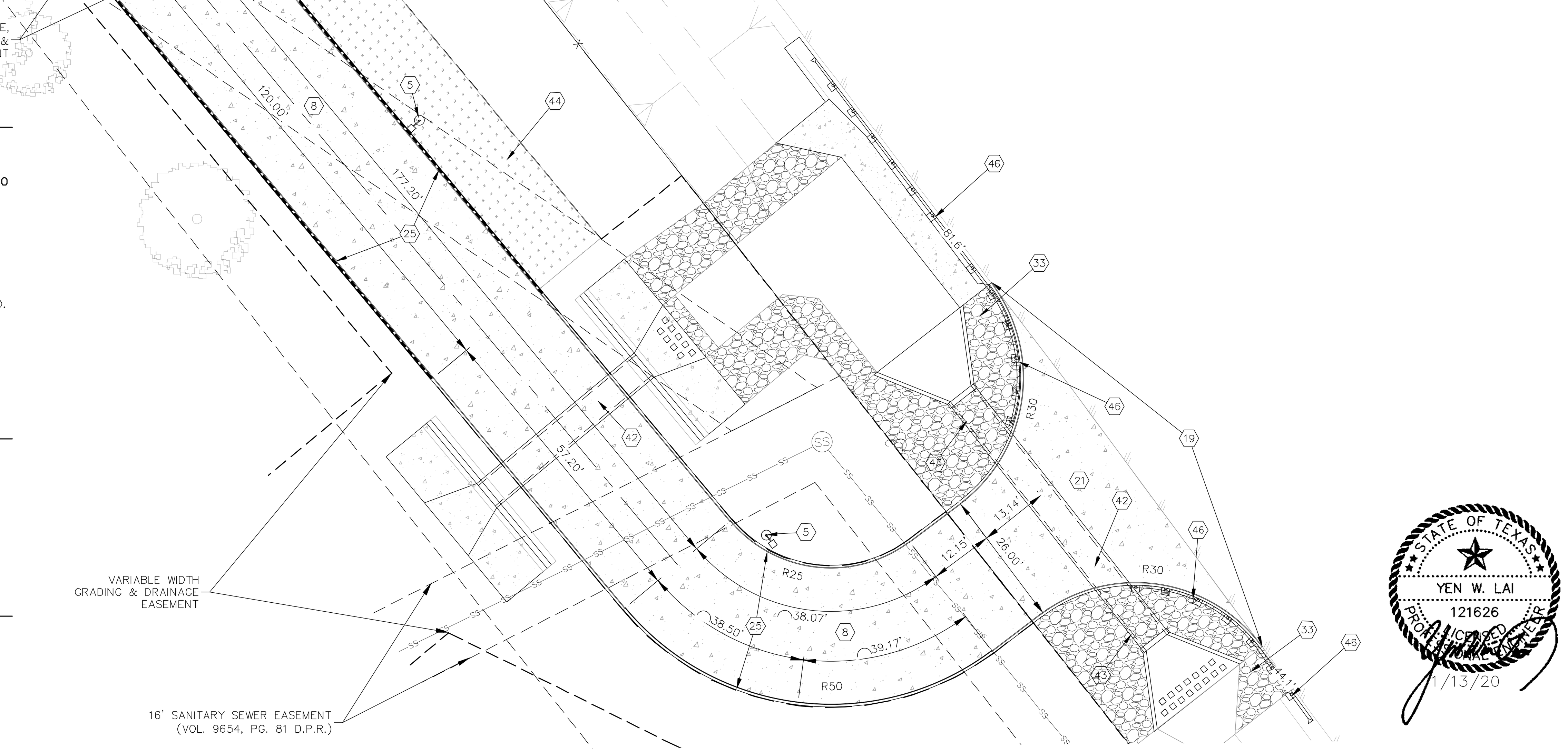
1. FIRE LANES SHALL BE DESIGNED AND PROVIDED PER CITY STANDARDS.
2. HANDICAPPED PARKING AREAS SHALL BE DESIGNED AND PROVIDED PER CITY STANDARDS AND SHALL COMPLY WITH REQUIREMENTS OF THE CURRENT, ADOPTED **CITY OF SAN ANTONIO** BUILDING CODES, AS AMENDED.
3. MECHANICAL UNITS, DUMPSTER, & TRASH COMPACTORS SHALL BE SCREENED IN ACCORDANCE WITH THE **CITY OF SAN ANTONIO**.
4. THIS SITE PLAN DOES NOT CONSTITUTE APPROVAL OF ANY SIGNAGE. ALL SIGNAGE IS CONTINGENT UPON APPROVAL BY BUILDING INSPECTION DEPARTMENT AND THE ISSUE OF A SIGN PERMIT.
5. APPROVAL OF THE SITE PLAN IS NOT FINAL UNTIL ALL ENGINEERING PLANS ARE APPROVED.
6. ALL SIDEWALKS, CURBS, RAMPS, AND DRIVE APPROACHES IN THE RIGHT OF WAY SHALL BE IN COMPLIANCE WITH CURRENT TEXAS ACCESSIBILITY STANDARDS AND CITY OF SAN ANTONIO DESIGN STANDARDS PRIOR TO FINAL INSPECTION.

PLANNING / LAND USE TABLE

PROPOSED USE	AUTO PARTS RETAIL
SITE AREA	0.980 ACRES (42,682 SF)
LEGAL DESCRIPTION	
ZONING	C-2 COMMERCIAL
ONSITE IMPERVIOUS COVER	0.65 ACRES (28,159 SF) (66%)

PARKING SUMMARY

PARKING RATIO	1/500 SF GFA (MIN)	1/375 SF (MAX)
PARKING REQUIRED	14 SPACES (MIN)	18 SPACES (MAX)
PARKING PROVIDED	18 SPACES (INCLUDING HANDICAP)	
HANDICAP PARKING PROVIDED:	2 SPACES	



OWNER:
AutoZone, Inc.
123 S. FRONT STREET, 3rd FLOOR
MEMPHIS, TENNESSEE 38103

PREPARED FOR: **AutoZone** STORE DEVELOPMENT
Store No.: 5196
HWY 281 & BULVERDE RD.
SAN ANTONIO TEXAS 78258

SITE PLAN

SCALE:

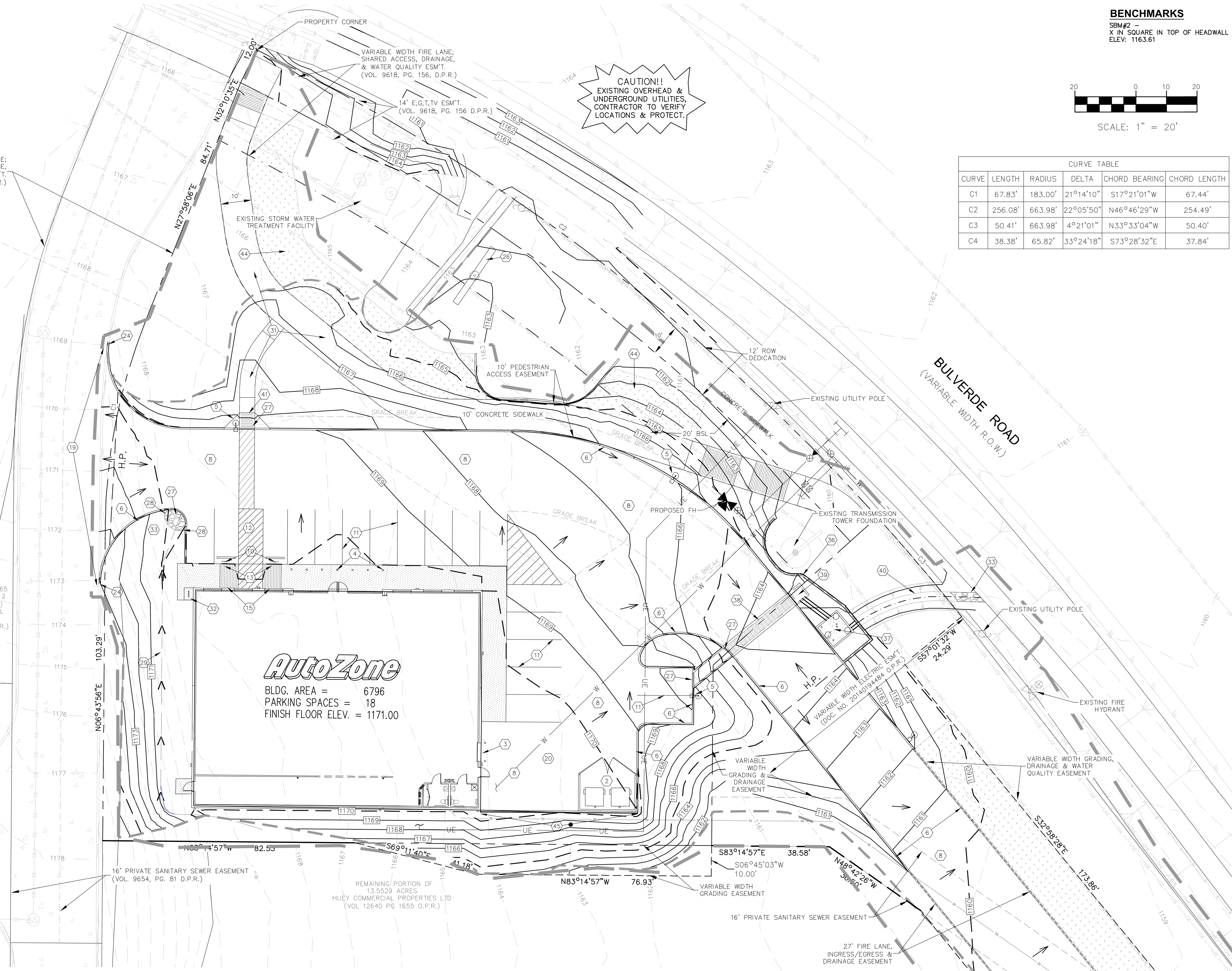
REVISIONS
1.
2.
3.
4.
5.
6.
7.

ARCHITECT:
DRAFTSMAN:
CHECKED BY:
DATE 12/31/19
PROTOTYPE SIZE

Westwood
COURSEN-KOEHLER
a division of Westwood
1718 Dry Creek Way, Suite 110 San Antonio, Texas 78259
Tel: 210.265.8300 · Fax: 210.855.5530
TBPE Firm No. F-11756 · TBPLS Firm No. F-10194064
www.westwoodps.com
JOB NO. - 23362.00

C1.0

File: N:\0023362.00\1 Project Data\Dwg\Civil\C1.A SITE DETAILS I.dwg



BENCHMARKS

SBM#2 –
X IN SQUARE IN TOP OF HEADWALL
ELEV: 1163.61

SCALE: 1" = 20'

CURVE TABLE					
CURVE	LENGTH	RADIUS	DELTA	CHORD BEARING	CHORD LENGTH
C1	67.83'	183.00'	21°14'10"	S17°21'01"W	67.44'
C2	256.08'	663.98'	22°05'50"	N46°46'29"W	254.49'
C3	50.41'	663.98'	4°21'01"	N33°33'04"W	50.40'
C4	38.38'	65.82'	33°24'18"	S73°28'32"E	37.84'

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

EXISTING UTILITIES

THE LOCATION OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL VERIFY THE EXACT LOCATION PRIOR TO COMMENCING WORK AND IS RESPONSIBLE FOR ANY/ALL DAMAGES RESULTING FROM THEIR FAILURE TO LOCATE AND PRESERVE ANY/ALL UTILITIES.

CONTRACTOR NOTE

PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL REQUEST PROJECT CONTROL POINTS TO ESTABLISH CONSTRUCTION SITE FROM SURVEYOR OF RECORD.

LEGEND

- EXISTING EDGE OF ASPHALT
- EXISTING CONTOUR WITH ELEVATION
- EXISTING OVERHEAD ELECTRIC
- EXISTING BARBED WIRE FENCE
- EXISTING EARTHEN LOW
- EXISTING SANITARY SEWER MANHOLE
- EXISTING STORM DRAIN MANHOLE
- REINFORCED CONCRETE PIPE
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING UTILITY POLE
- EXISTING GUY WIRE
- EXISTING SIGN
- FOUND CHISELED "X"
- EXISTING TxDOT PIN
- EXISTING MONUMENT
- EXISTING TREE
- BOUNDARY LINE
- PROPOSED SANITARY SEWER
- PROPOSED UNDERGROUND ELECTRIC
- PROPOSED WATER SERVICE
- BOUNDARY LINE
- PROPOSED HEADER CURB
- PROPOSED SAWTOOTH CURB
- SITE KEYNOTE
- PROPOSED CONTOUR WITH ELEVATION
- PROPOSED SAWTOOTH CURB
- PROPOSED HIGH POINT
- PROPOSED GRADING LIMITS
- PROPOSED SWALE

KEYNOTES

BUILDING & PAVING

1. PIPE GUARD – SEE DETAILS 16 / C1.A
2. DUMPSTER LAYOUT – SEE DETAILS 8,9,10, & 11/ C1.A
3. SERVICE DOOR PLAN – SEE DETAIL 15/ C1.A
4. BOLLARD PLAN – SEE DETAIL 14/ C1.A
5. CONCRETE LIGHT POLE BASE – SEE DETAIL 13/ C1.A AIM LIGHT FIXTURE IN DIRECTION AS INDICATED.
6. CURB & GUTTER @ CONCRETE PAVING – SEE DETAIL 1 / C1.A
7. SLOPE END OF CURB 4:1
8. CONCRETE PAVING – SEE DETAIL 4, SHEET C1.A EXPANSION AND CONTROL JOINTS – SEE DETAILS 23 & 24, SHEET C1.A. MAXIMUM SPACING FOR CONTROL JOINTS IS 15' O.C. EACH WAY.
9. ASPHALT PAVEMENT – SEE DTL. 2 & 3, SHEET C1.A
10. 6'-0" LONG CONCRETE WHEEL STOP PINNED TO PAVEMENT (TYPICAL). LOCATE 3'-6" FROM FACE OF CURB OR SIDEWALK SEE DETAIL 17 / C1.A
11. 4" WIDE PARKING STRIPE PAINTED WHITE (TYP.)
12. 4" WIDE DIAGONAL STRIPES PAINTED WHITE AT 2 FT. O.C.
13. HANDICAP PARKING SIGN – SEE DETAIL 12/ C1.A G.C. TO PROVIDE ONE VAN ACCESSIBLE SIGN.
14. CONCRETE SIDEWALK – SEE DETAIL 22/ C1.A FOR SIDEWALKS AROUND BUILDING
15. ACCESSIBLE RAMP – SEE DETAIL 6 & 19 /C1.A – MAX. SLOPE 1:12 (8.33%) , MAX. CROSS SLOPE 1:50 (2.00%) TRUNCATED DOME TO BE A CONTRASTING COLOR. FOR SIDEWALK IN ROW, SEE DETAIL THIS SHEET.
16. NEW LANDSCAPE AREA – PROVIDE 3" TOPSOIL & SOD. SEE SHEET L1.0 FOR ADDITIONAL INFORMATION
17. EXISTING CURB TO REMAIN
18. PROPOSED STORMWATER INLET. SEE SHEET C1.1 FOR ADDITIONAL INFORMATION. (NOT USED)
19. CONTRACTOR TO MATCH EXISTING PAVEMENT AND/OR CURB WITH PROPOSED PAVEMENT AND/OR CURB
20. LOADING AREA: SLOPE AT MAX. 2.5% AWAY FROM BUILDING.
21. CONCRETE DRIVEWAY. SEE DETAIL SHEET C1.B
22. 5' X 5' CONCRETE PAD
23. FREEZELESS YARD HYDRANT – SEE DETAIL 4 SHEET M2
24. MATCH EXISTING CURB
25. SAWTOOTH CURB – SEE DETAIL SHEET C1.B
26. PROPOSED SIGN: 5'-6" X 18'-0" PYLON SIGN 35'-0" OVERALL HEIGHT
27. PROPOSED HEADER CURB – SEE DETAIL SHEET C1.B
28. PROPOSED 2' CURB TRANSITION – SEE DETAIL SHEET C1.B
29. PROPOSED SWALE
30. HEAVY CONCRETE PAVING – SEE DETAIL 4, SHEET C1.A EXPANSION AND CONTROL JOINTS – SEE DETAILS 23 & 24, SHEET C1.A. MAXIMUM SPACING FOR CONTROL JOINTS IS 15' O.C. EACH WAY.
31. PROPOSED 5' SIDEWALK WITH A MAXIMUM 2% CROSS SLOPE. – SEE CONCRETE SIDEWALK DETAIL SHEET C1.B
32. BIKE RACK – SEE DETAIL SHEET C1.B
33. 4" TO 6" BULL ROCK @ 1.5" DEPTH
34. CONCRETE SIDEWALK DRAIN – SEE DETAIL SHEET C1.B
35. ACCESSIBLE RAMP – SEE DETAIL SHEET C1.B – MAX. SLOPE 1:12 (8.33%) MAX. CROSS SLOPE 1:50 (2.00%)
36. PROPOSED STRUCTURAL RETAINING WALL – SEE STRUCTURAL PLANS FOR DETAILS
37. PROPOSED STORM WATER TREATMENT FACILITY – SEE SHEET C1.2 FOR DETAILS
38. PROPOSED TRENCH DRAIN – SEE SHEET C1.2 FOR DERAILS
39. PROPOSED 4'x4' JUNCTION BOX – SEE SHEET C1.2 FOR DETAILS
40. PROPOSED EARTHEN CHANNEL – SEE SHEET C1.2 FOR DETAILS
41. PROPOSED FLARED WHEEL CHAIR RAMP – SEE DETAIL SHEET C1.B
42. PROPOSED CONCRETE BOX CULVERT – SEE SHEET C1.2A & C1.2B FOR DETAILS
43. PROPOSED CONCRETE HEADWALL – SEE SHEET C1.2C FOR DETAILS
44. PROPOSED ENGINEERING FILTER STRIP – SEE SHEET C1.5 FOR DETAIL
45. PROPOSED EXTENDED CURB – SEE DETAIL SHEET C1.B
46. METAL BEAM GUARD FENCE – SEE DETAIL SHEET C1.2C

GENERAL NOTES

1. PROOF ROLL BUILDING AND ALL PARKING AREAS. NOTIFY THE ARCHITECT OF ANY UNACCEPTABLE AREAS.
2. EDGE OF NEW PAVEMENT TO BE FLUSH WITH EXISTING PAVEMENT.
3. ALL SIDEWALK CURB AND GUTTER STREET PAVING, CURB CUTS, DRIVEWAY APPROACHES, HANDICAP RAMP, ETC. CONSTRUCTED OUTSIDE THE PROPERTY LINE IN THE RIGHT-OF-WAY SHALL CONFORM TO ALL MUNICIPAL AND/OR STATE SPECIFICATIONS AND REQUIREMENTS.
4. FOR AREAS OUTSIDE THE PROPERTY LINES, REPAIR AND/OR REPLACE ALL DAMAGE DONE TO EXISTING ELEMENTS (SIDEWALKS, PAVING, LANDSCAPING, ETC.) AS REQUIRED BY OWNER AND/OR GOVERNING AUTHORITY.
5. FOR PROPOSED UTILITY LOCATIONS, SEE THE UTILITY PLAN.

FOR CONTROL POINTS AND BENCHMARKS REFERENCE AUTOZONE STORE #M659 SAN ANTONIO, TEXAS ALTA/NSPS TITLE SURVEY PROVIDED BY KFW ENGINEERING PRIOR TO CONSTRUCTION

GENERAL NOTES

1. CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNERS AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF THE WORK ON THIS PROJECT, EXCEPTING FROM LIABILITY ARISING FROM SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.
2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL MAKE CERTAIN THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER DOCUMENTS APPROVED BY ALL OF THE PERMITTING AUTHORITIES.
3. CONTRACTOR SHALL COMPLY WITH **THE CITY OF SAN ANTONIO** STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, ALL OTHER APPLICABLE BUILDING CODES AND REGULATIONS, AS WELL AS OTHER SAFETY CODES AND INSPECTION PROVISIONS APPLICABLE TO THIS PROJECT.
4. BARRICADES AND WARNING SIGNS SHALL CONFORM TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND GENERALLY BE LOCATED TO AFFORD MAXIMUM PROTECTION TO THE PUBLIC AS WELL AS CONSTRUCTION PERSONNEL AND EQUIPMENT AND TO ASSURE AN EXPEDITIOUS TRAFFIC FLOW AT ALL TIMES DURING CONSTRUCTION. DURING THE PROGRESS OF THE WORK THE CONTRACTOR SHALL PROVIDE ACCESS FOR LOCAL TRAFFIC.
5. CONTRACTOR IS REQUIRED TO VERIFY PROJECT ELEVATIONS. "MATCH EXISTING" SHALL BE UNDERSTOOD TO SIGNIFY VERTICAL AND HORIZONTAL ALIGNMENT.
6. EXISTING ABOVE GROUND UTILITIES HAVE BEEN PLOTTED BY DIRECT FIELD INVESTIGATION. UNDERGROUND UTILITIES HAVE BEEN COMPILED FROM VARIOUS SOURCES AND REQUIRE VERIFICATION BY THE CONTRACTOR TO ESTABLISH THEIR EXACT LOCATION AND DEPTH. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO EXISTING ABOVE GROUND OR UNDERGROUND UTILITIES, INCLUDING THOSE NOT SHOWN ON DRAWINGS. DEAD UTILITY LINES SHALL BE SUITABLY CAPPED AT CONTRACTOR'S EXPENSE.
7. THE INFORMATION CONTAINED ON THESE DRAWINGS IN REGARDS TO EXISTING UTILITIES, TOPOGRAPHY, CONTOURS, HYGROGRAPH, OR SUBSURFACE CONDITIONS IS FURNISHED SOLELY AS THE BEST INFORMATION AVAILABLE AT THIS TIME. ITS ACCURACY IS NOT GUARANTEED AND ITS USE IN NO WAY RELIEVES THE CONTRACTOR OF ANY RESPONSIBILITY FOR DAMAGE DUE TO ANY INACCURACIES.
8. ANY EXISTING OFF-SITE IMPROVEMENTS OR UTILITY REMOVED, DAMAGED OR UNDERCUT BY CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE ENGINEER AND APPROVED BY THE RESPECTIVE UTILITY AT THE CONTRACTOR'S EXPENSE.
9. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING EXISTING FACILITIES FROM DAMAGE AND COST OF REPAIR TO EXISTING FACILITIES AND IMPROVEMENTS AS A RESULT OF CONTRACTOR'S WORK. THE CONTRACTOR SHALL NOTIFY ALL UTILITY OFFICES 48 HOURS PRIOR TO STARTING WORK AND SHALL COORDINATE THEIR WORK WITH THE UTILITY OFFICES.
10. DURING CONSTRUCTION, THE OWNER WILL PROVIDE A GEOTECHNICAL LAB TO PERFORM MATERIALS TESTING DURING THE CONSTRUCTION. RETESTS REQUIRED DUE TO CONTRACTOR PERFORMANCE SHALL BE PAID BY THE CONTRACTOR.
11. THE CONTRACTOR SHALL KEEP AND LEAVE THE AREA NEAT AND CLEAN DURING CONSTRUCTION. DEBRIS SHALL NOT BE BURIED OR DUMPED ANYWHERE WITHIN THE LIMITS OF THE PROJECT. ALL DEBRIS, CONSTRUCTION MATERIALS, CONTRACTOR'S BUILDINGS OR EQUIPMENT, LOGS, STUMPS, BOULDERS, OR ANY OTHER EXTRANEOUS MATERIAL DEPOSITED DURING CONSTRUCTION SHALL BE DISPOSED OFFSITE PROMPTLY IN COMPLIANCE WITH APPLICABLE REGULATIONS.
12. ANY EXISTING PAVEMENT, CURBS AND/OR SIDEWALKS DAMAGED OR REMOVED WILL BE REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.
13. ALL UNDERGROUND FACILITIES SHALL BE CONSTRUCTED, CONNECTED AND TESTED PRIOR TO THE CONSTRUCTION OF SURFACE IMPROVEMENTS, SUCH AS SIDEWALKS, CURBS, GUTTERS AND PAVING.
14. ALL SURVEY MONUMENTS DISTURBED DURING CONSTRUCTION SHALL BE REPLACED BY A LICENSED SURVEYOR AND PAID FOR BY THE CONTRACTOR.
15. THE CONTRACTOR SHALL KEEP THE APPROVED SET OF PLANS ON SITE AT ALL TIMES. THE CONTRACTOR SHALL REDLINE THE ACTUAL LOCATIONS AND DIMENSIONS (VERTICAL/HORIZONTAL) OF UTILITIES, STRUCTURES, SERVICES, AND OTHER DETAILS DEFERRING FROM OR NOT SHOWN ON THE ORIGINAL DRAWINGS. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL SUBMIT THE RECORD DRAWINGS TO THE ENGINEER OF RECORD.
16. THE CONTRACTOR IS RESPONSIBLE FOR RESTORING TO ITS ORIGINAL OR BETTER CONDITION ANY DAMAGE DONE TO EXISTING FENCES, CURBS, STREETS, SIGNS, DRIVEWAYS, LANDSCAPING AND STRUCTURES.
17. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.181, THE GAS PURVEYOR MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND GAS VALVES THAT ARE IN THE PROJECT AREA.
18. MATERIAL SPECIFICATIONS:
    CONCRETE/CONCRETE RIPRAP: CLASS A 3000 PSI IN 28 DAYS UNLESS OTHERWISE NOTED ON PLANS

    REINFORCING STEEL: CONFORM TO A.S.T.M. A-615, GRADE 60 (2" COVER UNLESS OTHERWISE NOTED ON PLANS)

    PIPE RAILING: CONFORM TO A.S.T.M. A-53, GRADE B, OR A-501

    STRUCTURAL STEEL: CONFORM TO A.S.T.M. A-36
19. THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL WASTE MATERIALS UPON PROJECT COMPLETION. NO WASTE MATERIAL SHALL BE PERMANENTLY PLACED IN THE 100-YEAR FLOOD PLAIN WITHOUT FIRST OBTAINING THE NECESSARY PERMITS.
20. THE CONTRACTOR SHALL PROVIDE TEMPORARY SEDIMENTATION AND EROSION CONTROLS AS REQUIRED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) AND/OR AS INDICATED ON THE PLANS. UPON FINAL STABILIZATION OF DISTURBED AREAS AND FINAL ACCEPTANCE OF THE PROJECT; ALL TEMPORARY CONTROLS SHALL BE REMOVED BY CONTRACTOR.

SITE PLAN NOTES

1. FIRE LANES SHALL BE DESIGNED AND PROVIDED PER CITY STANDARDS.
2. HANDICAPPED PARKING AREAS SHALL BE DESIGNED AND PROVIDED PER CITY STANDARDS AND SHALL COMPLY WITH REQUIREMENTS OF THE CURRENT, ADOPTED **CITY OF SAN ANTONIO** BUILDING CODES, AS AMENDED.
3. MECHANICAL UNITS, DUMPSTER, & TRASH COMPACTORS SHALL BE SCREENED IN ACCORDANCE WITH THE **CITY OF SAN ANTONIO**.
4. THIS SITE PLAN DOES NOT CONSTITUTE APPROVAL OF ANY SIGNAGE. ALL SIGNAGE IS CONTINGENT UPON APPROVAL BY BUILDING INSPECTION DEPARTMENT AND THE ISSUE OF A SIGN PERMIT.
5. APPROVAL OF THE SITE PLAN IS NOT FINAL UNTIL ALL ENGINEERING PLANS ARE APPROVED.
6. ALL SIDEWALKS, CURBS, RAMPS, AND DRIVE APPROACHES IN THE RIGHT OF WAY SHALL BE IN COMPLIANCE WITH CURRENT TEXAS ACCESSIBILITY STANDARDS AND CITY OF SAN ANTONIO DESIGN STANDARDS PRIOR TO FINAL INSPECTION.

PLANNING / LAND USE TABLE

PROPOSED USE	AUTO PARTS RETAIL
SITE AREA	0.980 ACRES (42,682 SF)
LEGAL DESCRIPTION	
ZONING	C-2 COMMERCIAL
ONSITE IMPERVIOUS COVER	0.65 ACRES (28,159 SF) (66%)

PARKING SUMMARY

PARKING RATIO	1/500 SF GFA (MIN)	1/375 SF (MAX)
PARKING REQUIRED	14 SPACES (MIN)	18 SPACES (MAX)
PARKING PROVIDED	18 SPACES (INCLUDING HANDICAP)	
HANDICAP PARKING PROVIDED:	2 SPACES	

OWNER:
AutoZone, Inc.
123 S. FRONT STREET, 3rd FLOOR
MEMPHIS, TENNESSEE 38103

NORTH

PREPARED FOR: ***AutoZone*** *STORE DEVELOPMENT*
Store No.: 5196
HWY 281 & BULVERDE RD.
SAN ANTONIO TEXAS 78258

WPAP SITE PLAN

SCALE:

REVISIONS

1.
2.
3.
4.
5.
6.
7.

ARCHITECT:
DRAFTSMAN:
CHECKED BY:
DATE 12/31/19
PROTOTYPE SIZE

Westwood
COURSEN-KOEHLER
a division of Westwood
1718 Dry Creek Way, Suite 110 San Antonio, Texas 78259
Tel: 210.265.8300 · Fax: 210.855.5530
TBPE Firm No. F-11756 · TBPLS Firm No. F-10194064
www.westwoodps.com
JOB NO. - 23362.00

File: N:\0023362.00\3 Civil\TCEQ\WPAP\Report Attachments & Exhibits\WPAP SITE PLAN.dwg

Temporary Stormwater

TCEQ - 0602

Temporary Stormwater Section

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(b)(4)(A), (B), (D)(I) and (G); Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Temporary Stormwater Section** is hereby submitted for TCEQ review and executive director approval. The application was prepared by:

Print Name of Customer/Agent: Yen W. Lai, P.E.

Date: 1/09/2020

Signature of Customer/Agent:

Regulated Entity Name: AutoZone TX5196

Project Information

Potential Sources of Contamination

Examples: Fuel storage and use, chemical storage and use, use of asphaltic products, construction vehicles tracking onto public roads, and existing solid waste.

1. Fuels for construction equipment and hazardous substances which will be used during construction:

   ☐ The following fuels and/or hazardous substances will be stored on the site: _____

   These fuels and/or hazardous substances will be stored in:

   ☐ Aboveground storage tanks with a cumulative storage capacity of less than 250 gallons will be stored on the site for less than one (1) year.

☐ Aboveground storage tanks with a cumulative storage capacity between 250 gallons and 499 gallons will be stored on the site for less than one (1) year.

☐ Aboveground storage tanks with a cumulative storage capacity of 500 gallons or more will be stored on the site. An Aboveground Storage Tank Facility Plan application must be submitted to the appropriate regional office of the TCEQ prior to moving the tanks onto the project.

☑ Fuels and hazardous substances will not be stored on the site.

2. ☑ **Attachment A - Spill Response Actions**. A site specific description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is attached.

3. ☐ Temporary aboveground storage tank systems of 250 gallons or more cumulative storage capacity must be located a minimum horizontal distance of 150 feet from any domestic, industrial, irrigation, or public water supply well, or other sensitive feature.

4. ☑ **Attachment B - Potential Sources of Contamination**. A description of any activities or processes which may be a potential source of contamination affecting surface water quality is attached.

Sequence of Construction

5. ☑ **Attachment C - Sequence of Major Activities**. A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is attached.

   ☑ For each activity described, an estimate (in acres) of the total area of the site to be disturbed by each activity is given.

   ☑ For each activity described, include a description of appropriate temporary control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

6. ☑ Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: Salado Creek Watershed

Temporary Best Management Practices (TBMPs)

Erosion control examples: tree protection, interceptor swales, level spreaders, outlet stabilization, blankets or matting, mulch, and sod. Sediment control examples: stabilized construction exit, silt fence, filter dikes, rock berms, buffer strips, sediment traps, and sediment basins. Please refer to the Technical Guidance Manual for guidelines and specifications. All structural BMPs must be shown on the site plan.

7. ☑ **Attachment D – Temporary Best Management Practices and Measures**. TBMPs and measures will prevent pollution of surface water, groundwater, and stormwater. The construction-phase BMPs for erosion and sediment controls have been designed to retain sediment on site to the extent practicable. The following information is attached:

☑ A description of how BMPs and measures will prevent pollution of surface water, groundwater or stormwater that originates upgradient from the site and flows across the site.

☑ A description of how BMPs and measures will prevent pollution of surface water or groundwater that originates on-site or flows off site, including pollution caused by contaminated stormwater runoff from the site.

☑ A description of how BMPs and measures will prevent pollutants from entering surface streams, sensitive features, or the aquifer.

☑ A description of how, to the maximum extent practicable, BMPs and measures will maintain flow to naturally-occurring sensitive features identified in either the geologic assessment, TCEQ inspections, or during excavation, blasting, or construction.

8. ☑ The temporary sealing of a naturally-occurring sensitive feature which accepts recharge to the Edwards Aquifer as a temporary pollution abatement measure during active construction should be avoided.

☐ **Attachment E - Request to Temporarily Seal a Feature**. A request to temporarily seal a feature is attached. The request includes justification as to why no reasonable and practicable alternative exists for each feature.

☑ There will be no temporary sealing of naturally-occurring sensitive features on the site.

9. ☑ **Attachment F - Structural Practices**. A description of the structural practices that will be used to divert flows away from exposed soils, to store flows, or to otherwise limit runoff discharge of pollutants from exposed areas of the site is attached. Placement of structural practices in floodplains has been avoided.

10. ☑ **Attachment G - Drainage Area Map**. A drainage area map supporting the following requirements is attached:

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin will be provided.

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a smaller sediment basin and/or sediment trap(s) will be used.

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin or other equivalent controls are not attainable, but other TBMPs and measures will be used in combination to protect down slope and side slope boundaries of the construction area.

☐ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area.

☑ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. Erosion and sediment controls other than sediment basins or sediment traps within each disturbed drainage area will be used.

11. ☐ **Attachment H - Temporary Sediment Pond(s) Plans and Calculations**. Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information must be signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed temporary BMPs and measures are attached.

☑ N/A

12. ☑ **Attachment I - Inspection and Maintenance for BMPs.** A plan for the inspection of each temporary BMP(s) and measure(s) and for their timely maintenance, repairs, and, if necessary, retrofit is attached. A description of the documentation procedures, recordkeeping practices, and inspection frequency are included in the plan and are specific to the site and/or BMP.

13. ☑ All control measures must be properly selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections by the applicant or the executive director, or other information indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations.

14. ☑ If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain).

15. ☑ Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50%. A permanent stake will be provided that can indicate when the sediment occupies 50% of the basin volume.

16. ☑ Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).

Soil Stabilization Practices

Examples: establishment of temporary vegetation, establishment of permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, or preservation of mature vegetation.

17. ☑ **Attachment J - Schedule of Interim and Permanent Soil Stabilization Practices**. A schedule of the interim and permanent soil stabilization practices for the site is attached.

18. ☑ Records must be kept at the site of the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.

19. ☑ Stabilization practices must be initiated as soon as practicable where construction activities have temporarily or permanently ceased.

Administrative Information

20. ☑ All structural controls will be inspected and maintained according to the submitted and approved operation and maintenance plan for the project.

21. ☑ If any geologic or manmade features, such as caves, faults, sinkholes, etc., are discovered, all regulated activities near the feature will be immediately suspended. The appropriate TCEQ Regional Office shall be immediately notified. Regulated activities must cease and not continue until the TCEQ has reviewed and approved the methods proposed to protect the aquifer from any adverse impacts.

22. ☑ Silt fences, diversion berms, and other temporary erosion and sediment controls will be constructed and maintained as appropriate to prevent pollutants from entering sensitive features discovered during construction.

ATTACHMENTS

Attachment A – Spill Response Actions

Attachment B – Potential Sources of Contamination

Attachment C – Sequence of Major Activities

Attachment D – Temporary Best Management Practices and Measures

Attachment E – Request to Temporarily Seal a Feature

Attachment F – Structural Practices

Attachment G – Drainage Area Map

Attachment H – Temporary Sediment Pond(s) Plans and Calculations

Attachment I – Inspection and Maintenance for BMPs

Attachment J – Schedule of Interim and Permanent Soil Stabilization Practices

Attachment A – Spill Response Actions

Site Specific Measures that will be taken to contain any spill of hydrocarbons or hazardous substances will include:

1. Immediate isolation of the substance source to keep additional spill or possible infiltration from occurring. Action will be taken to block the down gradient side using native earth material, absorbent blankets or absorbent socks.

2. The substance and contaminated materials will be excavated and placed within an impervious container or impervious-lined area that is protected from storm water runoff. Excavated materials will be covered to protect against rain.

3. The hazardous substance will be positively identified.

4. The spill area, after the excavation, will be sampled to verify that the hazardous substance has been properly and adequately remediated.

5. The excavated materials will be disposed of at an approved facility licensed to accept the substance identified. All transporting and disposal will follow State requirements for hazardous substances.

6. Fuels and Hazardous Substances are not to be stored on site.

7. Contractor shall become familiar with the Site Plan and confine activities with fuels and hazardous substances to locations that are adequate for the isolation and prevention of contamination in the event of a spill.

In addition to the above site specific measures, the following recommended measures from the Edwards Aquifer Technical Guidance Manual (RG-348, 2005); Section 1.4.16, Significant/Hazardous Spills section should also be followed and are provided herein. These measures are to prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

The following steps will help reduce the storm water impacts of leaks and spills:

Education

1. Be aware that different materials pollute in different amounts. Make sure that each employee knows what a “significant spill” is for each material they use, and what is the appropriate response for “significant” and “insignificant” spills. Employees should also be aware of when spill must be reported to the TCEQ. Information available in 30 TAC 327.4 and 40 CFR 302.4.
2. Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.

3. Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).
4. Establish a continuing education program to indoctrinate new employees.
5. Have contractor's superintendent or representative oversee and enforce proper spill prevention and control measures.

General Measures

1. To the extent that the work can be accomplished safely, spills of oil, petroleum products, and substances listed under 40 CFR parts 110,117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.
2. Store hazardous materials and wastes in covered containers and protect from vandalism.
3. Place a stockpile of spill cleanup materials where it will be readily accessible.
4. Train employees in spill prevention and cleanup.
5. Designate responsible individuals to oversee and enforce control measures.
6. Spills should be covered and protected from storm water run-on during rainfall to the extent that it doesn't compromise cleanup activities.
7. Do not bury or wash spills with water.
8. Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMPs.
9. Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with applicable regulations.
10. Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.
11. Place Material Safety Data Sheets (MSDS), as well as proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.
12. Keep waste storage areas clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.

Cleanup

1. Clean up leaks and spills immediately.
2. Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be disposed of as hazardous waste.
3. Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly.

Minor Spills

1. Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.

2. Use absorbent materials on small spills rather than hosing down or burying the spill.
3. Absorbent materials should be promptly removed and disposed of properly.
4. Follow the practice below for a minor spill:
    a. Contain the spread of the spill.
    b. Recover spilled materials.
    c. Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills
Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities. Spills should be cleaned up immediately:

1. Contain spread of the spill.
2. Notify the project foreman immediately.
3. If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.
4. If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
5. If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Significant/Hazardous Spills
For significant or hazardous spills that are in reportable quantities:

1. Notify the TCEQ by telephone as soon as possible and within 24 hours at 512-339-2929 (Austin) or 210-490-3096 (San Antonio) between 8 AM and 5 PM. After hours, contact the Environmental Release Hotline at 1-800-832-8224. It is the contractor's responsibility to have all emergency phone numbers at the construction site.
2. For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor should notify the National Response Center at (800) 424-8802.
3. Notification should first be made by telephone and followed up with a written report.
4. The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.
5. Other agencies which may need to be consulted include, but are not limited to, the City Police Department, County Sheriff Office, Fire Departments, etc.

More information on spill rules and appropriate responses is available on the TCEQ website at: http://www.tnrcc.state.tx.us/enforcement/emergency_response.html

Vehicle and Equipment Maintenance

1. If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the run-on of storm water and the runoff of spills.
2. Regularly inspect onsite vehicles and equipment for leaks and repair immediately
3. Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.
4. Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
5. Place drip pans or absorbent materials under paving equipment when not in use.
6. Use absorbent materials on small spills rather than hosing down or burying the spill. Remove the absorbent materials promptly and dispose of properly.
7. Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.
8. Oil filters disposed of in trashcans or dumpsters can leak oil and pollute storm water. Place the oil filter in a funnel over a waste oil-recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask the oil supplier or recycler about recycling oil filters.
9. Store cracked batteries in a non- leaking secondary container. Do this with all cracked batteries even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Vehicle and Equipment Fueling

1. If fueling must occur on site, use designated areas, located away from drainage courses, to prevent the run-on of storm water and the runoff of spills.
2. Discourage "topping off" of fuel tanks.
3. Always use secondary containment, such as a drain pan, when fueling to catch spills/ leaks.

Attachment B – Potential Sources of Contamination

1. Contaminants and fluids may be dropped from the use of construction equipment
2. Contaminants and fluids may be dropped from vehicles entering the site during construction
3. Contaminants and fluids may be dropped or spilled by workers during construction
4. Mud or dirt may be tracked onto streets from construction areas
5. Fine particles may be washed from non-stabilized areas
6. Contaminants and fluids may be spilled with the use of chemical / portable toilets during construction
7. Contaminants and fluids may be spilled during the connection to the existing SCS

During construction of the infrastructure contamination could come from oil, grease and fuel drippings from construction equipment and also from the process of excavating materials and grading. Additionally, the use of chemical / portable toilets and the tie to the existing SCS are a potential source of contamination.

If fuel or a hazardous substance spill occurs, the contaminants and contaminated soil will be removed and placed in an impervious container to be disposed of off-site at an approved disposal site. The placement of excavated materials will have appropriately sized erosion and sedimentation controls placed down gradient to prevent debris from the construction activity from washing down gradient of the site. The construction site will be cleaned of materials and debris at the end of each workday and/or at the completion of the infrastructure. The application of the prime coat and/or tack coat will be timed to avoid any occurrence of a rain event before placement of the HMAC, which would provide permanent soil stabilization for the street areas. Any concrete structures, flatwork, and formwork would also be similarly timed to avoid any occurrence of a rain event.

In any case of a spill or contamination, the Spill Response Actions identified in ATTACHMENT A of this section should be followed.

Attachment C – Sequence of Major Activities

1. Installation of temporary BMP's

2. Grubbing & Clearing – Underbrush & Trees removed as necessary: ROWs, utility easements, and drains.
   Disturbed area is approximately 1.3 acres

3. Excavation and construction of drainage and water quality infrastructure.

4. Excavation - The Parking lots, and drainage areas will be cut to sub grade and flow line elevations.
   Disturbed area is approximately 0.9 acres

5. The utility lines, sanitary sewer lines, and water lines will be trenched. The trenches will be backfilled.
   Disturbed area is approximately 0.2 acres

6. Grading of lot, landscape areas, drainage infrastructure, and utility easements.
   Disturbed area is approximately 1.3 acres

7. After all the sanitary sewer service and water service have been trenched, the trenches will be re-excavated and the sewer lines will be installed to proper grade.
   Disturbed area is approximately 0.1 acres

8. Infrastructure Construction – Parking lot, drainage, and supporting infrastructure construction.
   Disturbed area is approximately 0.9 acres

9. AutoZone building construction.
   Disturbed area is approximately 0.17 acres

   *Most of the acreage that is disturbed is within the approximately 1.3 acres of Parking lot and landscape areas.

Note: The excavated material from the trenches will be placed on the up gradient side of the trench. The trench would serve as a temporary sedimentation and erosion control measure.

Attachment D – Temporary Best Management Practices and Measures

The Temporary Best Management Practices (TBMPs) and Measures that will be used:

Silt Fences (Sediment Control Rolls may be substituted where appropriate)
Stabilized Construction Entrances
Equipment Staging Area
Concrete Wash Out
Inlet Protection (Gravel Filter Bags)
Rock Berm or Gabion
Preservation of Natural Areas
Regular Inspection & Maintenance

All structural TBMPs will be installed prior to the beginning of construction as per the Sedimentation & Erosion Control Plan and Storm Water Pollution Prevention Plan. The TBMPs will remain in place and will be maintained until all construction has ceased and perennial vegetative cover with a density of 70 percent has occurred.

1. Install stabilized construction entrance; Establish equipment staging area and concrete wash out
2. Installation of TBMPs - rock berm, inlet protection and silt fences as appropriate
3. Grubbing & Clearing
4. Excavation
5. Grading
6. Infrastructure Construction
7. Building Construction
8. Establish 70 percent vegetative cover
9. Remove TBMPs

The temporary measures to be used during construction to prevent pollution of surface water, groundwater, and storm water runoff will be the use of silt fencing, inlet protection, and rock berm, as necessary, generally located along the down gradient side of the project area as indicated in the Water Pollution Abatement Plan. The stabilized construction entrance, concrete wash out and equipment staging area will be located as practicable. The equipment staging area and concrete washout should be in the proximity of the construction entrance / exit and not located near a well, floodplain, or other potential sources of contamination. Structural practices, as applicable, will be installed prior to each phase of the project and will be maintained during the construction of that phase. Disturbed areas will be stabilized, re-vegetated if denuded, within 14 days after temporary (21 days) or permanent cessation of construction activities. Any concrete, flatwork, and formwork would also be similarly timed to avoid any occurrence of a rain event.

TRENCH EXCAVATION SAFETY PROTECTION

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE(S) WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLIES WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

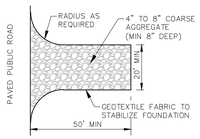
EXISTING UTILITIES

THE LOCATION OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL VERIFY THE EXACT LOCATION PRIOR TO COMMENCING WORK AND IS RESPONSIBLE FOR ANY/ALL DAMAGES RESULTING FROM THEIR FAILURE TO LOCATE AND PRESERVE ANY/ALL UTILITIES.

CONTRACTOR NOTE

PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL REQUEST PROJECT CONTROL POINTS TO ESTABLISH CONSTRUCTION SITE FROM SURVEYOR OF RECORD.

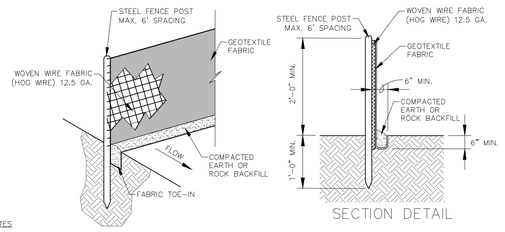
BENCHMARKS



STABILIZED CONSTRUCTION ENTRANCE\EXIT NOTES:

1. AVOID CURVES ON PUBLIC ROADS AND STEEP SLOPES. REMOVE VEGETATION AND OTHER OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA. GRADE CROWN FOUNDATION FOR POSITIVE DRAINAGE.
2. THE MINIMUM WIDTH OF THE ENTRANCE/EXIT SHOULD BE 12 FEET OR THE FULL WIDTH OF EXIT ROADWAY, WHICHEVER IS GREATER.
3. THE CONSTRUCTION ENTRANCE SHOULD BE AT LEAST 50 FEET LONG.
4. IF THE SLOPE TOWARD THE ROAD EXCEEDS 2%, CONSTRUCT A RIDGE, 6 TO 8 INCHES HIGH WITH 3:1 (H:V) SIDE SLOPES, ACROSS THE FOUNDATION APPROXIMATELY 15 FEET FROM THE ENTRANCE TO DIVERT RUNOFF AWAY FROM THE PUBLIC ROAD.
5. PLACE GEOTEXTILE FABRIC AND GRADE FOUNDATION TO IMPROVE STABILITY, ESPECIALLY WHERE WET CONDITIONS ARE ANTICIPATED.
6. PLACE STONE TO DIMENSIONS AND GRADE SHOWN ON PLANS. LEAVE SURFACE SMOOTH AND SLOPE FOR DRAINAGE.
7. DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A SEDIMENT TRAP OR BASIN.
8. INSTALL PIPE UNDER PAD AS NEEDED TO MAINTAIN PROPER PUBLIC ROAD DRAINAGE.

1 STABILIZED CONSTRUCTION ENTRANCE \ EXIT
N.T.S.

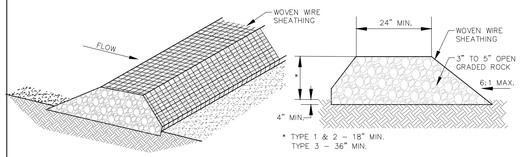


SECTION DETAIL

SILT FENCE NOTES

1. STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF ONE FOOT DEEP AND SPACED NOT MORE THAN 8 FEET ON CENTER. WHERE WATER CONCENTRATES, THE MAXIMUM SPACING SHOULD BE 6 FEET.
2. LAY OUT FENCING DOWN-SLOPE OF DISTURBED AREA, FOLLOWING THE CONTOUR AS CLOSELY AS POSSIBLE. THE FENCE SHOULD BE SITED SO THAT THE MAXIMUM DRAINAGE AREA IS 1/4 ACRE/100 FEET OF FENCE.
3. THE TOE OF THE SILT FENCE SHOULD BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWN-SLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TREATED (e.g. pavement or rock outcrop), WEIGHT FABRIC FLAP WITH 3 INCHES OF PEA GRAVEL ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.
4. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
5. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POST. THERE SHOULD BE A 3-FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.
6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. INSPECT ALL FENCING WEEKLY, AND AFTER ANY RAINFALL.
8. REMOVE SEDIMENT WHEN BUILDUP REACHES 6 INCHES.
9. REPLACE ANY TORN FABRIC OR INSTALL A SECOND LINE OF FENCING PARALLEL TO THE TORN SECTION.
10. REPLACE OR REPAIR ANY SECTION CRUSHED OR COLLAPSED IN THE COURSE OF CONSTRUCTION ACTIVITY. IF A SECTION OF FENCE IS OBSTRUCTING VEHICULAR ACCESS, CONSIDER RELOCATING IT TO A SPOT WHERE IT WILL PROVIDE EQUAL PROTECTION, BUT WILL NOT OBSTRUCT VEHICLE ACCESS POINTS.
11. WHEN CONSTRUCTION IS COMPLETE, THE SEDIMENT SHOULD BE DISPOSED OF IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTATION AND THE PRIOR LOCATION OF THE SILT FENCE SHOULD BE REVEGETATED. THE FENCE ITSELF SHOULD BE DISPOSED OF IN AN APPROVED LANDFILL.

2 SILT FENCE
N.T.S.



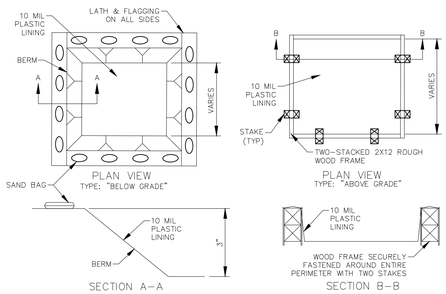
ISOMETRIC PLAN VIEW SECTION DETAIL

ROCK BERM NOTES:

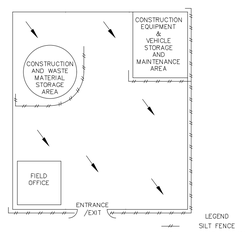
1. LAY OUT THE WOVEN WIRE SHEATHING PERPENDICULAR TO THE FLOW LINE. THE SHEATHING SHOULD BE 20 GAUGE WOVEN WIRE MESH WITH 1 INCH OPENINGS.
2. BERM SHOULD HAVE A TOP WIDTH OF 2 FEET MINIMUM WITH SIDE SLOPES BEING 2:1 (H:V) OR FLATTER.
3. PLACE THE ROCK ALONG THE SHEATHING AS SHOWN IN DIAGRAM, TO A HEIGHT NOT LESS THAN 18".
4. WRAP THE WIRE SHEATHING AROUND THE ROCK AND SECURE WITH TIE WIRE SO THAT THE ENDS OF THE SHEATHING OVERLAP AT LEAST 2 INCHES, AND THE BERM RETAINS ITS SHAPE WHEN WALKED ON.
5. BERM SHOULD BE BUILT ALONG THE CONTOUR AT ZERO PERCENT GRADE OR AS NEAR AS POSSIBLE.
6. THE ENDS OF THE BERM SHOULD BE TIED INTO EXISTING UPSLOPE GRADE AND THE BERM SHOULD BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP TO PREVENT FAILURE OF THE CONTROL.

3 ROCK BERM
N.T.S.

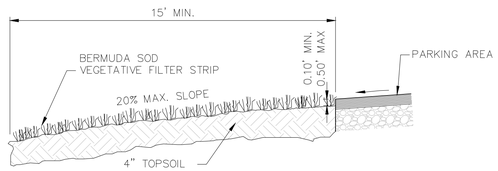
NOTE: ACTUAL LAYOUT DETERMINED IN FIELD, SHOULD BE PLACED IN THE PROXIMITY OF THE CONSTRUCTION ENTRANCE/ EXIT AND NOT LOCATED NEAR WELL, FLOODPLAIN, OR OTHER POTENTIAL SOURCES OF CONTAMINATION.



5 CONCRETE WASH OUT PIT
N.T.S.

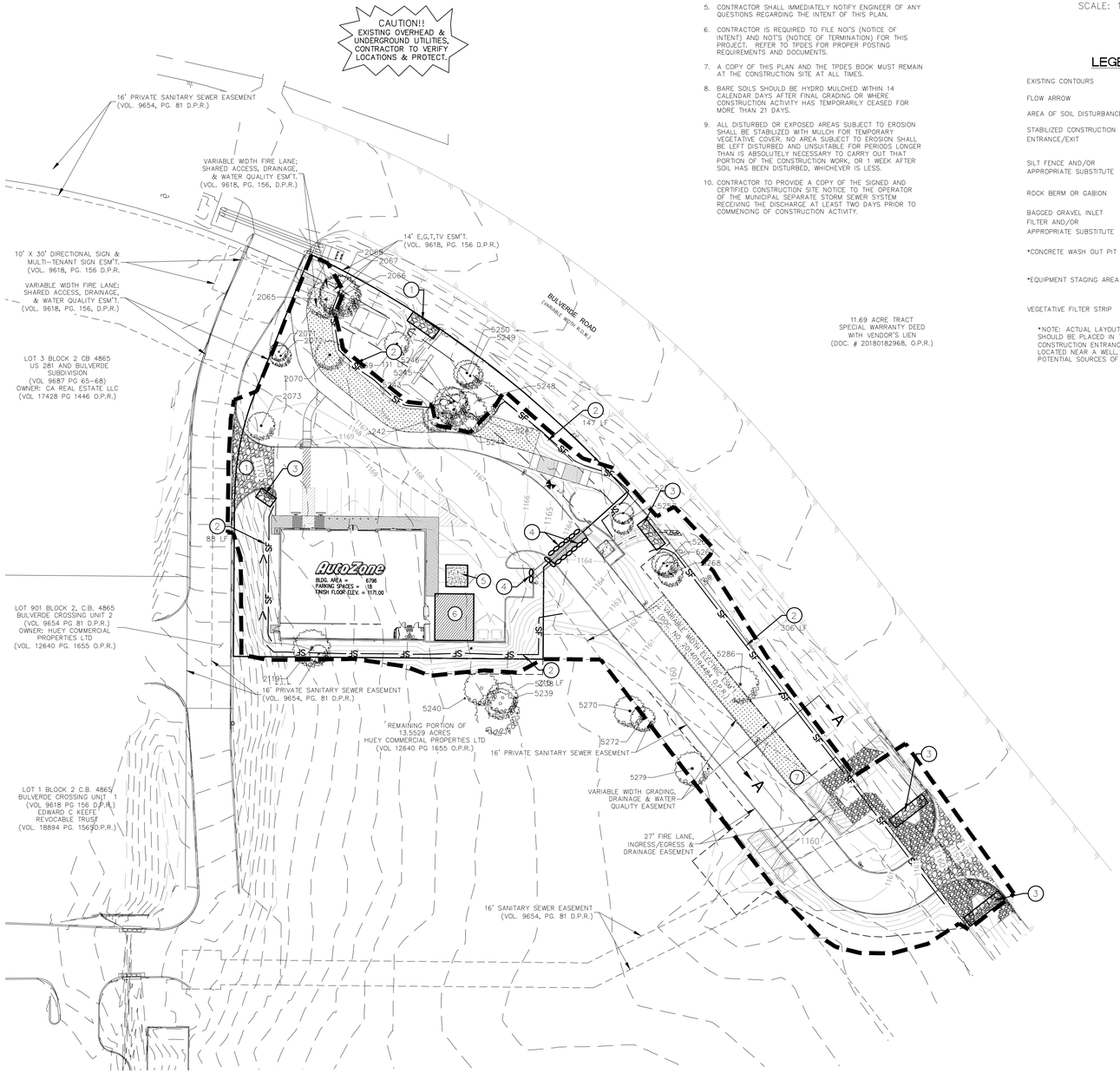


6 EQUIPMENT STAGING AREA
N.T.S.



SECTION A-A

7 VEGETATIVE FILTER STRIP
N.T.S.



GENERAL NOTES:

1. CONSTRUCTION ENTRANCE/EXIT LOCATION, CONCRETE WASHOUT PIT AND CONSTRUCTION EQUIPMENT AND STORAGE AREA ARE TO BE DETERMINED IN THE FIELD. THEY ARE SHOWN ON THIS PLAN FOR ILLUSTRATION PURPOSES ONLY.
2. IF NECESSARY, CONTRACTOR MAY MODIFY STORMWATER CONTROLS TO ACHIEVE THE DESIRED INTENT. ANY CHANGES ARE TO BE NOTED, SIGNED AND DATED BY THE RESPONSIBLE PARTY IN THE TPDES BOOK.
3. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL STORMWATER CONTROLS.
4. REFER TO TPDES BOOK FOR THIS PROJECT FOR MORE INFORMATION/DETAILS.
5. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY QUESTIONS REGARDING THE INTENT OF THIS PLAN.
6. CONTRACTOR IS REQUIRED TO FILE NOI'S (NOTICE OF INTENT) AND NOT'S (NOTICE OF TERMINATION) FOR THIS PROJECT. REFER TO TPDES FOR PROPER POSTING REQUIREMENTS AND DOCUMENTS.
7. A COPY OF THIS PLAN AND THE TPDES BOOK MUST REMAIN AT THE CONSTRUCTION SITE AT ALL TIMES.
8. BARE SOILS SHOULD BE HYDRO MULCHED WITHIN 14 CALENDAR DAYS AFTER FINAL GRADING OR WHERE CONSTRUCTION ACTIVITY HAS TEMPORARILY CEASED FOR MORE THAN 21 DAYS.
9. ALL DISTURBED OR EXPOSED AREAS SUBJECT TO EROSION SHALL BE STABILIZED WITH MULCH FOR TEMPORARY VEGETATIVE COVER. NO AREA SUBJECT TO EROSION SHALL BE LEFT DISTURBED AND UNSUITABLE FOR PERIODS LONGER THAN IS ABSOLUTELY NECESSARY TO CARRY OUT THAT PORTION OF THE CONSTRUCTION WORK, OR 1 WEEK AFTER SOIL HAS BEEN DISTURBED, WHICHEVER IS LESS.
10. CONTRACTOR TO PROVIDE A COPY OF THE SIGNED AND CERTIFIED CONSTRUCTION SITE NOTICE TO THE OPERATOR OF THE MUNICIPAL SEPARATE STORM SEWER SYSTEM RECEIVING THE DISCHARGE AT LEAST TWO DAYS PRIOR TO COMMENCING OF CONSTRUCTION ACTIVITY.

NOTE:
SEDIMENTATION AND EROSION CONTROLS SHOWN ARE SCHEMATIC ONLY, CONTROLS MAY BE FIELD LOCATED FOR BEST USE AND REPORTED TO ENGINEER. ADJUSTMENTS SHALL BE INDICATED ON PLAN BY CONTRACTOR.

40 0 20 40

SCALE: 1" = 40'

LEGEND

- EXISTING CONTOURS — 605 —
- FLOW ARROW
- AREA OF SOIL DISTURBANCE
- 1 STABILIZED CONSTRUCTION ENTRANCE/EXIT
- 2 SILT FENCE AND/OR APPROPRIATE SUBSTITUTE — SF —
- 3 ROCK BERM OR GABION
- 4 BAGGED GRAVEL INLET FILTER AND/OR APPROPRIATE SUBSTITUTE
- 5 *CONCRETE WASH OUT PIT — CWO —
- 6 *EQUIPMENT STAGING AREA
- 7 VEGETATIVE FILTER STRIP

*NOTE: ACTUAL LAYOUT DETERMINED IN FIELD, SHOULD BE PLACED IN THE PROXIMITY OF THE CONSTRUCTION ENTRANCE/ EXIT AND NOT LOCATED NEAR A WELL, FLOODPLAIN, OR OTHER POTENTIAL SOURCES OF CONTAMINATION.

OWNER:
AutoZone, Inc.
123 S. FRONT STREET, 3rd FLOOR
MEMPHIS, TENNESSEE 38103

PREPARED FOR:
AutoZone STORE DEVELOPMENT
Store No.: 5196
HWY 281 & BULVERDE RD.
SAN ANTONIO TEXAS 78258

EROSION CONTROL PLAN

SCALE:

REVISIONS
1.
2.
3.
4.
5.
6.
7.

ARCHITECT:
DRAFTSMAN:
CHECKED BY:
DATE 12/31/19
PROTOTYPE SIZE

Westwood
COURSEN-KOEHLER
a division of Westwood
8100 Dry Creek Way, Suite 110 San Antonio, Texas 78256
Tel: 210.265.8300 Fax: 210.855.5939
TBPE Firm No. F-11756 TBPLS Firm No. F-10194064
www.westwoodps.com
JOB NO - 23362.00

STATE OF TEXAS
YEN W. LAI
121626
LICENSED PROFESSIONAL ENGINEER
1/13/20

C1.5

File: N:\00233620\1 Project Data\Dwg\Civil\C1.5 EROSION CONTROL PLAN.dwg

Attachment E – Request to Temporarily Seal a Feature

Not applicable. There will be no temporary sealing of naturally-occurring sensitive features on-site.

Attachment F – Structural Practices

The structural practices proposed that will limit runoff discharge of pollutants from exposed areas of the site will be the use of silt fences (sediment control rolls may be substituted where appropriate), rock berms or gabions, inlet protection, concrete wash out, equipment staging area, and stabilized construction entrances to prevent the suspended solids and sediments from washing across the site.

1. A stabilized construction entrance with washout pit will be constructed at all locations where vehicular traffic enters and leaves the site. This will reduce tracking of sediments onto adjacent roadways and provide a stable area for entrance or exit from the construction site.

2. An equipment staging area will be established. This should be located in the proximity of the construction entrance / exit. This will provide a controlled and stable area to set-up materials and equipment.

3. Silt fencing will be installed adjacent to any drainage way which receives sheet flow from up gradient-disturbed areas and along the side slope perimeter of disturbed areas when no other TBMPs / Structural Practices are available.

4. Silt fencing will be installed in areas where up gradient flow from disturbed areas is concentrated, Washout of silt fencing may occur and should be monitored. Rock berms or gabions may also be installed along the side slope perimeter of disturbed areas if the up gradient flow is concentrated to prevent washout of silt fencing.

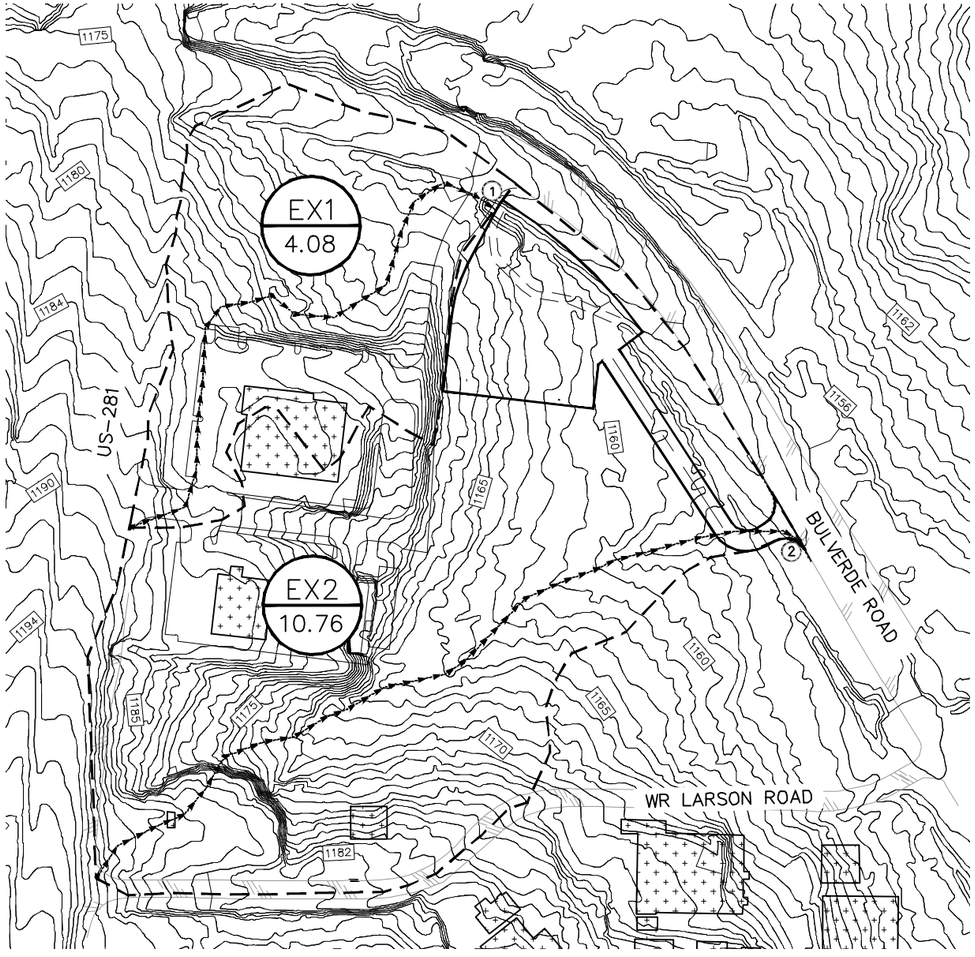
5. Gravel filter bags filled with washed pea gravel will be used at storm drainage inlets prior to stabilization of the drainage areas. Alternative inlet protection may be utilized as appropriate.

6. Rock berms or gabions will be installed at points of concentrated flow to trap sediment prior to exiting the site and prevent down gradient erosion.

Attachment G – Drainage Area Map

The drainage area map included with this section shows that the proposed project is divided into multiple drainage areas. The disturbed area which will be under construction and contributing to a specific point at any one time will not exceed 10 acres. Therefore the typical erosion and sedimentation controls will be sufficient to prevent the migration of loose or disturbed soils.

Please review the drainage area map on the following page.



SCALE: 1" = 200'

LEGEND

- EXISTING CONTOURS
- SITE BOUNDARY
- DRAINAGE AREA
- FLOW PATH
- EX1 / 4.3 — AREA / ACREAGE
- (2) — STUDY POINT #
- EXISTING STRUCTURE

RUNOFF CALCULATIONS - EXISITNG CONDITIONS

Study Point	Drainage Area	Area	C	Tc	Intensity, I (in/hr)			Discharge, Q(cfs)		
		(acres)		(min)	5-yr	25-yr	100-yr	5-yr	25-yr	100-yr
1	EX1	4.08	0.65	9.5	6.48	9.06	11.46	17.2	24.0	30.4
2	EX2	10.76	0.63	20.0	4.57	6.35	7.92	31.0	43.0	53.7

** Time of Concentration derived from Table 5.4.1 - Overland Flow Time and Table 5.4.2 - Average Velocities for Estimating Travel Time for Shallow Concentrated Flow, City of San Antonio Storm Water Design Criteria Manual, Rev. Apr 2019*

** Runoff Coefficient (C) derived from Table 5.5.3.A - Runoff Coefficient (C value), City of San Antonio Storm Water Design Criteria Manual, Rev. Apr 2019*

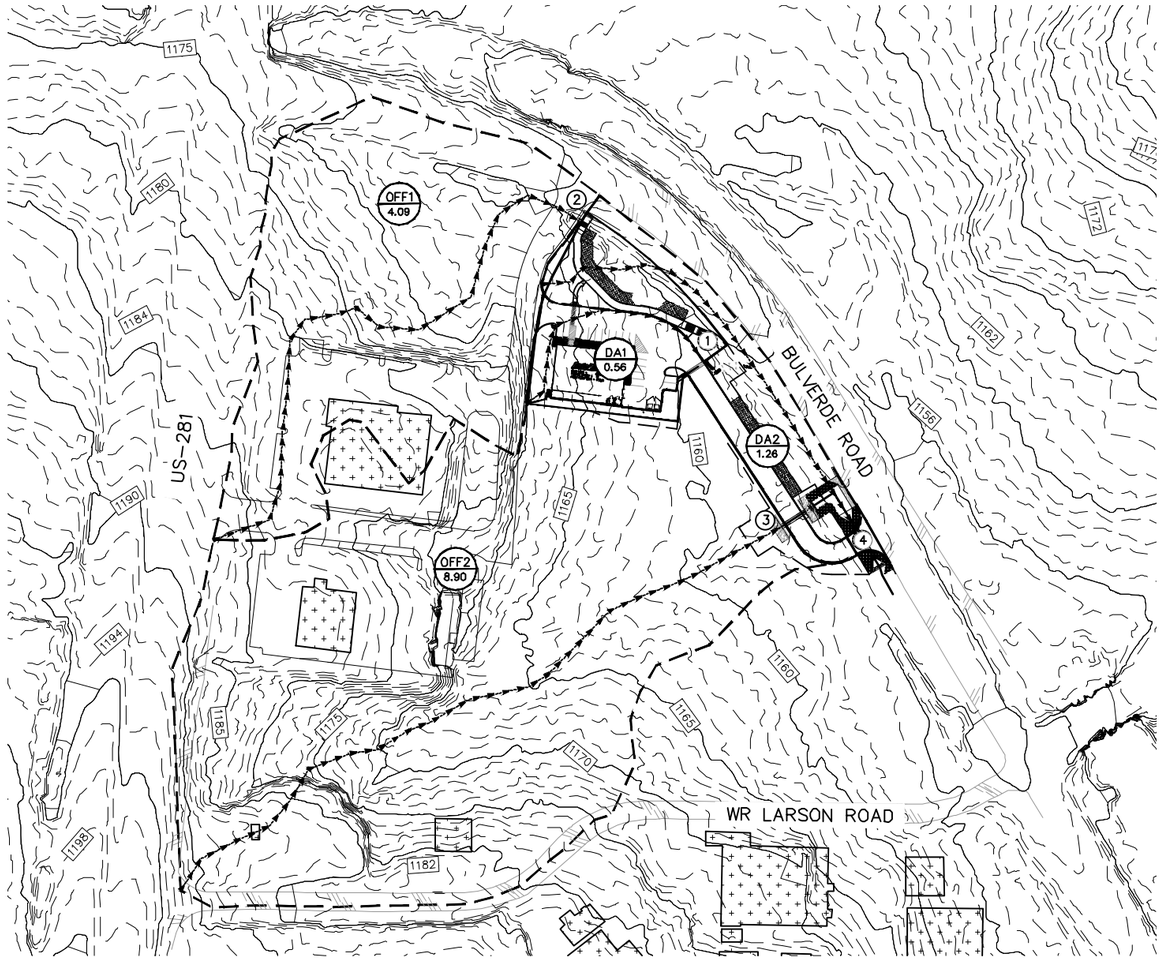
** Rainfall Intensities (I) derived from Table 5.5.1.B, City of San Antonio Storm Water Design Criteria Manual, Rev. Apr 2019*

Westwood
COURSEN-KOEHLER
a division of Westwood
1718 Dry Creek Way, Suite 110 • San Antonio, Texas 78259
Tel. 210.265.8300 • Fax. 210.855.5530
TBPE Firm No. F-11756 • TBPLS Firm No. 10194064
www.westwoodps.com

AUTO ZONE #5196
SAN ANTONIO, TEXAS

EXISITING CONDITIONS DRAINAGE AREA MAP

JOB NO.: 23362.00
DATE: JAN 2020
DRAWN: AML



SCALE: 1" = 200'

LEGEND

- EXISTING CONTOURS
- SITE BOUNDARY
- DRAINAGE AREA
- FLOW PATH
- EX1 / 4.3 — AREA / ACREAGE
- (2) — STUDY POINT #
- EXISTING STRUCTURE

RUNOFF CALCULATIONS - PROPOSED CONDITIONS

Study Point	Drainage Area	Area (acres)	C	Tc (min)	Intensity, I (in/hr)			Discharge, Q(cfs)		
					5-yr	25-yr	100-yr	5-yr	25-yr	100-yr
1	DA1	0.56	0.96	5.2	7.86	11.02	13.87	4.2	5.9	7.5
	DA2	1.26	0.56	17.9	4.85	6.73	8.41	3.4	4.7	5.9
2	OFF1	4.09	0.96	8.8	6.65	9.31	11.78	26.1	36.6	46.3
3	OFF2	8.90	0.96	8.8	6.65	9.31	11.78	56.8	79.5	100.6
4	DA1, 2 & OFF1, 2	14.81	0.92	17.9	4.85	6.73	8.41	66.1	91.7	114.6

** Time of Concentration derived from Table 5.4.1 - Overland Flow Time and Table 5.4.2 - Average Velocities for Estimating Travel Time for Shallow Concentrated Flow, City of San Antonio Storm Water Design Criteria Manual, Rev. Apr 2019*

** Runoff Coefficient (C) derived from Table 5.5.3.A - Runoff Coefficient (C value), City of San Antonio Stormwater Drainage Manual, Apr 2019*

** Rainfall Intensities (I) derived from Table 5.5.1.B, City of San Antonio Stormwater Drainage Manual, Apr 2019*

Westwood
COURSEN-KOEHLER
a division of Westwood
1718 Dry Creek Way, Suite 110 • San Antonio, Texas 78259
Tel: 210.265.8300 • Fax: 210.855.5530
TBPE Firm No. F-11756 • TBPLS Firm No. 10194064
www.westwoodps.com

AUTO ZONE #5196
SAN ANTONIO, TEXAS
PROPOSED CONDITIONS
DRAINAGE AREA MAP

JOB NO.: 23362.00
DATE: JAN 2020
DRAWN: AML

Attachment H – Temporary Sediment Pond(s) Plans and Calculations

No temporary sediment ponds or traps are required

Attachment I – Inspection and Maintenance for BMPs

Following are recommended minimum site specific inspection and maintenance measures for the BMPs proposed with this project. The recommended measures are derived from the Edwards Aquifer Technical Guidance Manual (RG-348, 2005); Section 1.3, Temporary Erosion Control BMPs and Section 1.4, Temporary Sediment Control BMPs. More detailed guidance is contained within the sections referenced.

The following steps will help prevent or reduce the sediment transported by storm water runoff in areas of disturbance:

General

1. Silt fences (sediment control rolls may be substituted where appropriate), rock berms, gabions, inlet protection, and stabilized construction entrances must be in place prior to the start of construction and will remain in place until construction has been completed and the site stabilized from further erosion.
2. The contractor will keep a record of the inspections, noting the condition of the BMPs and any corrective action taken to maintain the erosion control structures. In addition to the inspection and maintenance reports, the operator should keep records of the construction activity on site. In particular the following information should be kept:

    - The dates when major grading activities occur in a particular area.
    - The dates when construction activity ceases in an area, temporarily or permanently.
    - The dates when an area is stabilized, temporarily or permanently.
3. All soil, sand, gravel, and excavated material stockpiled on-site will have appropriately sized silt fencing placed up gradient and down gradient.

Inspection

1. A qualified E & S inspector (representing the discharger) shall inspect the following items once every seven (7) days, and within 24 hours after storm event of a ½-inch or greater rainfall:
    - Disturbed areas of the construction site that have not been finally stabilized
    - Areas used for storage of materials that are exposed to precipitation
    - Structural and stabilization control measures
    - Construction entrance/exits
2. The E & S inspector shall have authority to require immediate action on the part of the Contractor to correct any nonconforming items found during inspections or to require revisions to the E & S controls if appropriate. If revisions are needed, they shall be implemented within 7 calendar days after the date of inspection.
3. The E & S inspector will provide written reports covering all items/areas inspected and outlining corrective measures if any.

Maintenance

1. All erosion and sedimentation (E & S) measures/controls shall be maintained in good working order by the Contractor. Written maintenance reports shall be prepared covering all inspections and maintenance affecting E & S controls. If repair(s) are necessary, they shall be initiated within 24 hours after report.
2. The construction entrance shall be maintained in a condition which will prevent/minimize tracking or flowing of sediments onto public roadways. Sediments spilled, dropped, washed or tracked onto public roadways must be removed.
3. Temporary and permanent seeding and planting shall be maintained to insure the following:
    - Bare spots are filled in
    - Wash-outs are filled in
    - Healthy growth is promoted
4. For silt fence and rock berms, when silt reaches a depth equal to 6”, the silt shall be removed and mixed with other soil materials to be placed within the embankment areas of the project site.
5. Silt fences shall be maintained to insure the following:
    - Torn fabric is replaced
    - Loose fabric is properly re-secured
    - Loose post supports are plumbed and strengthened
    - Fabric bottom is anchored
6. Rock berms shall be maintained / cleaned by lifting, dropping and reshaping stones as required.
7. Diversion dykes, swales or berms shall be maintained to insure the following:
    - Positive drainage to an outlet
    - Any breaks promptly repaired.
8. Trash receptacles will be placed onsite for the use of workmen.
9. Documentation of maintenance/inspection activities will be kept on site.

An example log sheet for the inspection, maintenance and repair of the BMPs follows. The sample document is as provided by the Environmental Protection Agency (EPA). The sample can be found and is available for download at www.epa.gov/. It should be modified for the project specific conditions and BMPs. At a minimum, the Inspection Log / Report utilized by the qualified E&S inspector should provide details related to the inspection, maintenance and repair of the BMPs including observations on the site conditions.

Appendix B: Sample Inspection Report

Instructions

This sample inspection report has been developed as a helpful tool to aid you in completing your site inspections. This sample inspection report was created consistent with EPA's Developing Your Stormwater Pollution Prevention Plan. You can find both the guide and the sample inspection report (formatted in Microsoft Word) at www.epa.gov/npdes/swpppguide

This inspection report is provided in Microsoft Word format to allow you to easily customize it for your use and the conditions at your site. You should also customize this form to help you meet the requirements in your construction general permit related to inspections. **If your permitting authority provides you with an inspection report, please use that form.**

For more information on inspections, please see Developing Your Stormwater Pollution Plan Chapters 6 and 8.

Using the Inspection Report
This inspection report is designed to be customized according to the BMPs and conditions at your site. For ease of use, you should take a copy of your site plan and number all of the stormwater BMPs and areas of your site that will be inspected. A brief description of the BMP or area should then be listed in the site-specific section of the inspection report. For example, specific structural BMPs such as construction site entrances, sediment ponds, or specific areas with silt fence (e.g., silt fence along Main Street; silt fence along slope in NW corner, etc.) should be numbered and listed. You should also number specific non-structural BMPs or areas that will be inspected (such as trash areas, material storage areas, temporary sanitary waste areas, etc).

You can complete the items in the "General Information" section that will remain constant, such as the project name, NPDES tracking number, and inspector (if you only use one inspector). Print out multiple copies of this customized inspection report to use during your inspections.

When conducting the inspection, walk the site by following your site map and numbered BMPs/areas for inspection. Also note whether the overall site issues have been addressed (customize this list according to the conditions at your site). Note any required corrective actions and the date and responsible person for the correction in the Corrective Action Log.

Stormwater Construction Site Inspection Report

General Information			
Project Name			
NPDES Tracking No.		**Location**	
Date of Inspection		**Start/End Time**	
Inspector's Name(s)			
Inspector's Title(s)			
Inspector's Contact Information			
Inspector's Qualifications	Insert qualifications or add reference to the SWPPP. (See Section 5 of the SWPPP Template)		
Describe present phase of construction			

Type of Inspection:
❑ Regular ❑ Pre-storm event ❑ During storm event ❑ Post-storm event

Weather Information

Has there been a storm event since the last inspection? ❑Yes ❑No
If yes, provide:
Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in):

Weather at time of this inspection?
❑ Clear ❑Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snowing ❑ High Winds
❑ Other: Temperature:

Have any discharges occurred since the last inspection? ❑Yes ❑No
If yes, describe:

Are there any discharges at the time of inspection? ❑Yes ❑No
If yes, describe:

Site-specific BMPs

- *Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.*
- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1		❑Yes ❑No	❑Yes ❑No	
2		❑Yes ❑No	❑Yes ❑No	
3		❑Yes ❑No	❑Yes ❑No	
4		❑Yes ❑No	❑Yes ❑No	
5		❑Yes ❑No	❑Yes ❑No	
6		❑Yes ❑No	❑Yes ❑No	
7		❑Yes ❑No	❑Yes ❑No	
8		❑Yes ❑No	❑Yes ❑No	
9		❑Yes ❑No	❑Yes ❑No	
10		❑Yes ❑No	❑Yes ❑No	
11		❑Yes ❑No	❑Yes ❑No	

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
12		❑Yes ❑No	❑Yes ❑No	
13		❑Yes ❑No	❑Yes ❑No	
14		❑Yes ❑No	❑Yes ❑No	
15		❑Yes ❑No	❑Yes ❑No	
16		❑Yes ❑No	❑Yes ❑No	
17		❑Yes ❑No	❑Yes ❑No	
18		❑Yes ❑No	❑Yes ❑No	
19		❑Yes ❑No	❑Yes ❑No	
20		❑Yes ❑No	❑Yes ❑No	

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	❑Yes ❑No	❑Yes ❑No	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	❑Yes ❑No	❑Yes ❑No	
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	❑Yes ❑No	❑Yes ❑No	
4	Are discharge points and receiving waters free of any sediment deposits?	❑Yes ❑No	❑Yes ❑No	
5	Are storm drain inlets properly protected?	❑Yes ❑No	❑Yes ❑No	
6	Is the construction exit preventing sediment from being tracked into the street?	❑Yes ❑No	❑Yes ❑No	
7	Is trash/litter from work areas collected and placed in covered dumpsters?	❑Yes ❑No	❑Yes ❑No	
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	❑Yes ❑No	❑Yes ❑No	

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	❑Yes ❑No	❑Yes ❑No	
10	Are materials that are potential stormwater contaminants stored inside or under cover?	❑Yes ❑No	❑Yes ❑No	
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	❑Yes ❑No	❑Yes ❑No	
12	(Other)	❑Yes ❑No	❑Yes ❑No	

Non-Compliance

Describe any incidents of non-compliance not described above:

CERTIFICATION STATEMENT

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Print name and title: _____

Signature:_____ Date:_____

Attachment J – Schedule of Interim and Permanent Soil Stabilization Practices

The schedule of interim and permanent soil stabilization will be as follows:

1. Interim/permanent stabilization will be performed on denuded and/or disturbed areas within 14 days after temporary (21 days) or permanent cessation of construction activities.

2. Permanent stabilization will be done with the completion of the infrastructure construction and with the completion of the construction of the main building structure.

Refer to ATTACHMENT C in the TEMPORARY STORMWATER SECTION for a schedule summary.

The soil stabilization practices for this project may include: establishment of temporary vegetation, establishment of permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, and preservation of mature vegetation. Use of drought resistant wildflowers should be considered as a supplement to existing vegetation in appropriate areas. Permanent stabilization of the soil within the roadway is completed with the final pavement course and completion of the sidewalks.

The primary practice will be the establishment of vegetation and the protection of existing vegetation including trees. Seeding and/or sod will be done in areas ready for final landscaping, areas to final grade, and in areas that are otherwise practicable. Areas where final grading is not complete will either be re-vegetated or allowed to re-vegetate naturally. Blankets and matting along with mulch may be used to aid in the establishment of vegetation and/or provide erosion stops.

The Edwards Aquifer Technical Guidance Manual (RG-348, 2005); *Section 1.2, General Guidelines* recommends the following practice for soil stabilization in periods of drought or when vegetation cannot be established.

"During times of year when vegetation cannot be established, soil mulching should be applied to moderate slopes and soils that are not highly erodible. On steep slopes or highly erodible soils, multiple mulching treatments should be used. Interlocking ceramic materials, filter fabric, and netting are available for this purpose…"

"Because of the hardy drought-resistant nature of wildflowers, they may be more beneficial as an erosion control practice than turf grass. While not as dense as turfgrass wildflower thatches and associated grasses are expected to be as effective in erosion control and contaminant absorption. Because thatches of wildflowers do not need fertilizers, pesticides, or herbicides, and the need for watering is minimal, implementation of this practice may result in cost savings… A wildflower stand requires several years to become established; however, maintenance requirements are minimal once the area is established."

The recommended soil stabilization practices are derived from the Edwards Aquifer Technical Guidance Manual (RG-348, 2005); *Section 1.2, General Guidelines*, *Section 1.3, Temporary Erosion Control BMPs,Section 1.4, Temporary Sediment Control BMPs, and Section 2.5, Landscaping and Vegetative Practices.* More detailed guidance is contained within the sections referenced.

Permanent Stormwater

TCEQ – 0600

Permanent Stormwater Section

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(b)(4)(C), (D)(Ii), (E), and (5), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Permanent Stormwater Section** is hereby submitted for TCEQ review and executive director approval. The application was prepared by:

Print Name of Customer/Agent: Yen W. Lai, P.E.

Date: 11/09/2020

Signature of Customer/Agent

Regulated Entity Name: AutoZone TX5196

Permanent Best Management Practices (BMPs)

Permanent best management practices and measures that will be used during and after construction is completed.

1. ☑ Permanent BMPs and measures must be implemented to control the discharge of pollution from regulated activities after the completion of construction.

   ☐ N/A

2. ☑ These practices and measures have been designed, and will be constructed, operated, and maintained to insure that 80% of the incremental increase in the annual mass loading of total suspended solids (TSS) from the site caused by the regulated activity is removed. These quantities have been calculated in accordance with technical guidance prepared or accepted by the executive director.

   ☑ The TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.

☐ A technical guidance other than the TCEQ TGM was used to design permanent BMPs and measures for this site. The complete citation for the technical guidance that was used is: _____

☐ N/A

3. ☑ Owners must insure that permanent BMPs and measures are constructed and function as designed. A Texas Licensed Professional Engineer must certify in writing that the permanent BMPs or measures were constructed as designed. The certification letter must be submitted to the appropriate regional office within 30 days of site completion.

   ☐ N/A

4. Where a site is used for low density single-family residential development and has 20 % or less impervious cover, other permanent BMPs are not required. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

   ☐ The site will be used for low density single-family residential development and has 20% or less impervious cover.
   ☐ The site will be used for low density single-family residential development but has more than 20% impervious cover.
   ☑ The site will not be used for low density single-family residential development.

5. The executive director may waive the requirement for other permanent BMPs for multi-family residential developments, schools, or small business sites where 20% or less impervious cover is used at the site. This exemption from permanent BMPs must be recorded in the county deed records, with a notice that if the percent impervious cover increases above 20% or land use changes, the exemption for the whole site as described in the property boundaries required by 30 TAC §213.4(g) (relating to Application Processing and Approval), may no longer apply and the property owner must notify the appropriate regional office of these changes.

   ☐ **Attachment A - 20% or Less Impervious Cover Waiver**. The site will be used for multi-family residential developments, schools, or small business sites and has 20% or less impervious cover. A request to waive the requirements for other permanent BMPs and measures is attached.
   ☐ The site will be used for multi-family residential developments, schools, or small business sites but has more than 20% impervious cover.
   ☑ The site will not be used for multi-family residential developments, schools, or small business sites.

6. ☑ **Attachment B - BMPs for Upgradient Stormwater**.

☐ A description of the BMPs and measures that will be used to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site is attached.

☑ No surface water, groundwater or stormwater originates upgradient from the site and flows across the site, and an explanation is attached.

☐ Permanent BMPs or measures are not required to prevent pollution of surface water, groundwater, or stormwater that originates upgradient from the site and flows across the site, and an explanation is attached.

7. ☑ **Attachment C - BMPs for On-site Stormwater**.

☑ A description of the BMPs and measures that will be used to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff from the site is attached.

☐ Permanent BMPs or measures are not required to prevent pollution of surface water or groundwater that originates on-site or flows off the site, including pollution caused by contaminated stormwater runoff, and an explanation is attached.

8. ☐ **Attachment D - BMPs for Surface Streams**. A description of the BMPs and measures that prevent pollutants from entering surface streams, sensitive features, or the aquifer is attached. Each feature identified in the Geologic Assessment as sensitive has been addressed.

☑ N/A

9. ☑ The applicant understands that to the extent practicable, BMPs and measures must maintain flow to naturally occurring sensitive features identified in either the geologic assessment, executive director review, or during excavation, blasting, or construction.

☑ The permanent sealing of or diversion of flow from a naturally-occurring sensitive feature that accepts recharge to the Edwards Aquifer as a permanent pollution abatement measure has not been proposed.

☐ **Attachment E - Request to Seal Features**. A request to seal a naturally-occurring sensitive feature, that includes, for each feature, a justification as to why no reasonable and practicable alternative exists, is attached.

10. ☑ **Attachment F - Construction Plans**. All construction plans and design calculations for the proposed permanent BMP(s) and measures have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer, and are signed, sealed, and dated. The plans are attached and, if applicable include:

☑ Design calculations (TSS removal calculations)
☑ TCEQ construction notes
☑ All geologic features
☑ All proposed structural BMP(s) plans and specifications

☐ N/A

11. ☑ **Attachment G - Inspection, Maintenance, Repair and Retrofit Plan**. A plan for the inspection, maintenance, repairs, and, if necessary, retrofit of the permanent BMPs and measures is attached. The plan includes all of the following:
    - ☑ Prepared and certified by the engineer designing the permanent BMPs and measures
    - ☐ Signed by the owner or responsible party
    - ☐ Procedures for documenting inspections, maintenance, repairs, and, if necessary retrofit
    - ☐ A discussion of record keeping procedures

    ☐ N/A

12. ☐ **Attachment H - Pilot-Scale Field Testing Plan**. Pilot studies for BMPs that are not recognized by the Executive Director require prior approval from the TCEQ. A plan for pilot-scale field testing is attached.

    ☑ N/A

13. ☐ **Attachment I -Measures for Minimizing Surface Stream Contamination**. A description of the measures that will be used to avoid or minimize surface stream contamination and changes in the way in which water enters a stream as a result of the construction and development is attached. The measures address increased stream flashing, the creation of stronger flows and in-stream velocities, and other in-stream effects caused by the regulated activity, which increase erosion that results in water quality degradation.

    ☑ N/A

Responsibility for Maintenance of Permanent BMP(s)

Responsibility for maintenance of best management practices and measures after construction is complete.

14. ☑ The applicant is responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another entity having ownership or control of the property (such as without limitation, an owner's association, a new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity. Such entity shall then be responsible for maintenance until another entity assumes such obligations in writing or ownership is transferred.

    ☐ N/A

15. ☑ A copy of the transfer of responsibility must be filed with the executive director at the appropriate regional office within 30 days of the transfer if the site is for use as a multiple single-family residential development, a multi-family residential development, or a non-residential development such as commercial, industrial, institutional, schools, and other sites where regulated activities occur.

    ☐ N/A

ATTACHMENTS

Attachment A – 20% of Less Impervious Cover Waiver

Attachment B – BMPs for Upgradient Stormwater

Attachment C – BMPs for On-site Stormwater

Attachment D – BMPs for Surface Streams

Attachment E – Request to Seal Features

Attachment F – Construction Plans

Attachment G – Inspection, Maintenance, Repair and Retrofit Plan

Attachment H – Pilot-Scale Field Testing Plan

Attachment I – Measures for Minimizing Surface Stream Contamination

Attachment A – 20% of Less Impervious Cover Waiver

Not Applicable – The commercial development will exceed 20% impervious cover; therefore no waiver will be requested.

Attachment B – BMPs for Upgradient Stormwater

Refer to Drainage Area Map for confirmation.

Attachment C – BMPs for On-site Stormwater

The permanent best management practices (BMPs) proposed for the on-site storm water runoff from the development are Contech Jellyfish Filter Treatment JFPD0806 and Engineered Vegetative Filter Strips. The anticipated pollutants would be fuel, oil and grease from vehicles including the suspended solids and sediments brought on-site by the vehicles, landscape products, and pest control products. The permanent BMPs proposed for this site are designed according to the TCEQ Technical Guidance Manual (TGM). The property owner must notify the TCEQ if the land use changes from the described use.

Design calculations for the permanent BMPs proposed for this site are provided within ATTACHMENT F of the PERMANENT STORMWATER SECTION.

Attachment D – BMPs for Surface Streams

Runoff does not directly outfall into a surface stream, but flows across natural vegetative filters or through a Contech Jellyfish Filter Treatment JFPD0806 structure to prevent pollutants from being conveyed and entering any down gradient streams. Therefore, no additional water pollution abatement is required. Moreover, no sensitive features were identified in the geologic assessment.

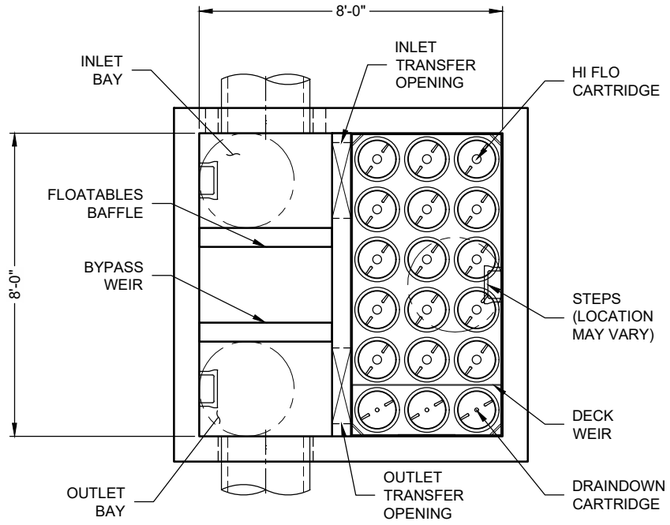
Attachment E – Request to Seal Features

Not Applicable - Requests to permanently seal any “sensitive” or “possibly sensitive” features are not being proposed.

Attachment F – Construction Plans

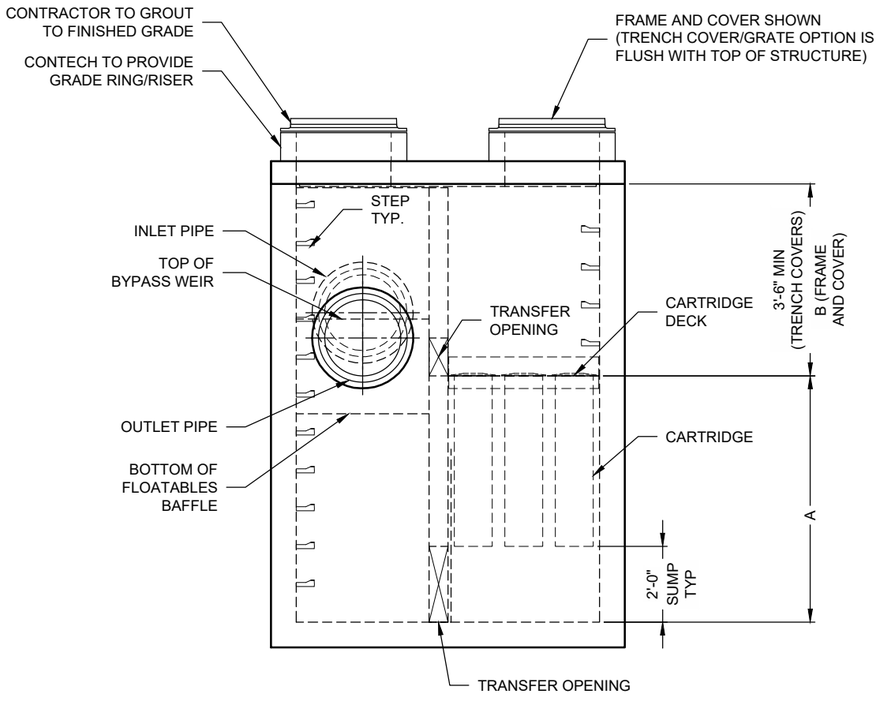
Following are construction plans and design calculations for the proposed BMPs. Calculations support the removal of the target amount of total suspended solids (TSS). Additional removal and over treatment of TSS has been provided by the Contech Jellyfish Filter Treatment JFPD0806. Impervious cover calculations have also been included. Calculations to determine the amount of TSS removed followed the methods shown in the Technical Guidance Manual.

A summary table of proposed Permanent BMPs is included in the calculations.



PLAN VIEW

(TOP SLAB NOT SHOWN FOR CLARITY)



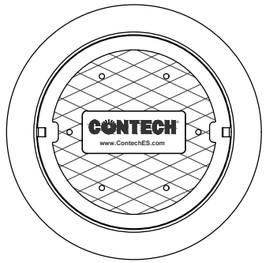
ELEVATION VIEW

JELLYFISH DESIGN NOTES

JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD PEAK DIVERSION STYLE WITH PRECAST TOP SLAB IS SHOWN. ALTERNATE OFFLINE VAULT AND/OR SHALLOW ORIENTATIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD

CARTRIDGE SELECTION

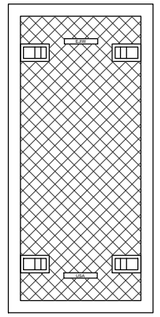
CARTRIDGE LENGTH	54"	40"	27"	15"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-6"	5'-4"	4'-3"	3'-3"
FLOW RATE HI-FLO / DRAINDOWN (CFS) (PER CART)	0.178 / 0.089	0.133 / 0.067	0.089 / 0.045	0.049 / 0.025
MAX. TREATMENT (CFS)	2.94	2.21	1.47	0.81
DECK TO INSIDE TOP (MIN) (B)	5.00	4.00	4.00	4.00



FRAME AND COVER

(DIAMETER VARIES)

N.T.S.



24"

TRENCH COVER

(LENGTH VARIES)

N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (cfs)	*
PEAK FLOW RATE (cfs)	*
RETURN PERIOD OF PEAK FLOW (yrs)	*
# OF CARTRIDGES REQUIRED (HF / DD)	*
CARTRIDGE LENGTH	*

PIPE DATA:	I.E.	MAT'L	DIA	SLOPE %	HGL
INLET #1	*	*	*	*	*
INLET #2	*	*	*	*	*
OUTLET	*	*	*	*	*

SEE GENERAL NOTES 6-7 FOR INLET AND OUTLET HYDRAULIC AND SIZING REQUIREMENTS.

RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES:

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE. www.ContechES.com
3. JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, WHICHEVER IS MORE STRINGENT, ASSUMING EARTH COVER OF 0' - 10', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-857, ASTM C-918, AND AASHTO LOAD FACTOR DESIGN METHOD.
6. OUTLET PIPE INVERT IS EQUAL TO THE CARTRIDGE DECK ELEVATION.
7. THE OUTLET PIPE DIAMETER FOR NEW INSTALLATIONS IS RECOMMENDED TO BE ONE PIPE SIZE LARGER THAN THE INLET PIPE AT EQUAL OR GREATER SLOPE.
8. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE.
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT).
D. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION.

Jellyfish Filter

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

JELLYFISH JFPD0808 STANDARD DETAIL PEAK DIVERSION CONFIGURATION

Impervious Cover & TSS Calculations

ATTACHMENT F
SUMMARY OF PERMANENT BMPs

PROJECT INFO

1.272 ACRES
0.808 ACRES OF IC
652 # TSS

WATERSHED / CATCHMENT AREA	PERMANENT BMP	GROSS AREA ACRES	IMP. COVER ACRES	PEAK TREATMENT FLOW REQ. ft3/s	DESIGN CAPTURE FLOW RATE ft3/s	REQ'D TSS REMOVAL Lm=80% INCREASED LOAD	MIN TSS REMOVAL lb	DESIGN TSS REMOVAL lb
DA1	JELLYFISH	0.038	0.030	1.85	1.94	414	414	454
DA2	JELLYFISH	0.539	0.478					
DA3*	NONE	0.005	0.005	-	-	4	4	-
DA4	EVFS	0.193	0.193	-	-	157	157	157
DA5*	NONE	0.064	0.000	-	-	0	0	-
DA6*	NONE	0.029	0.029	-	-	24	24	-
DA7	EVFS	0.404	0.073	-	-	53	53	44
TOTAL		1.272	0.808			652	652	655

An Overall Excess of 3 lb/yr of TSS Removal is provided for the Development.

**Area DA3, DA5, DA6 is an Uncaptured Area: Over Treatment is provided by Permanent BMPs designed for DA1, DA2, DA4, & DA7.*

DA4: Area of IC treated by VFS = 0.0538 ac

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$
$= 27.2(0.0538 \times 30)$
$= 43.90$ lb

DA7:

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$
$= 27.2(0.193 \times 30)$
$= 157.49$ lb

STATE OF TEXAS
YEN W. LAI
121626
LICENSED PROFESSIONAL ENGINEER
2/10/2020

IMPERVIOUS COVER SUMMARY							
AREA	ACREAGE	STRUCTURES IC (SF)	PARKING & OTHER IC (SF)	EXISTING IC (SF)	TOTAL POST DEVELOPMENT IC		TOTAL POST DEVELOPMENT IC (%)
					(SF)	(AC)	
DA1	0.038		1,318	0	1,318	0.030	2.4%
DA2	0.539	6,796	14,006	0	20,802	0.478	37.5%
DA3	0.005		231	0	231	0.005	0.4%
DA4	0.193		8,389	0	8,389	0.193	15.1%
DA5	0.064		0	0	0	0.000	0.0%
DA6	0.029		1,284	0	1,284	0.029	2.3%
DA7	0.404		3,177	374	3,551	0.082	6.4%
TOTAL	1.272	6,796	28,405	374	35,575	0.817	64.2%

LOT 3 BLOCK 2 CB 4865
US 281 AND BULVERDE
SUBDIVISION
(VOL 9687 PG 65-68)
OWNER: CA REAL ESTATE LLC
(VOL 17428 PG 1446 O.P.R.)

LOT 901 BLOCK 2, C.B. 4865
BULVERDE CROSSING UNIT 2
(VOL 9654 PG 81 D.P.R.)
OWNER: HUEY COMMERCIAL
PROPERTIES LTD
(VOL. 12640 PG. 1655 O.P.R.)

LOT 1 BLOCK 2 C.B. 4865
BULVERDE CROSSING UNIT 1
(VOL 9618 PG 156 D.P.R.)
EDWARD C KEEFE
REVOCABLE TRUST
(VOL. 18894 PG. 1565O.P.R.)

REMAINING PORTION OF
13.5529 ACRES
HUEY COMMERCIAL PROPERTIES LTD
(VOL 12640 PG 1655 O.P.R.)

11.69 ACRE TRACT
SPECIAL WARRANTY DEED
WITH VENDOR'S LIEN
(DOC. # 20180182968, O.P.R.)

DA7 0.404

EXISTING IMPERVIOUS COVER

15' ENGINEERED VEGETATIVE FILTER STRIP

DA3 0.005

DA2 0.539

EXISTING IMPERVIOUS COVER

CONTECH JELLYFISH JFPD0806 FILTER

AutoZone
BLDG. AREA = 6796
PARKING SPACES = 18
FINISH FLOOR ELEV. = 1171.00

DA1 0.038

DA4 0.193

DA5 0.064

16' PRIVATE SANITARY SEWER EASEMENT
(VOL. 9654, PG. 81 D.P.R.)

16' OFFSITE SANITARY SEWER EASEMENT

VARIABLE WIDTH ELECTRIC ESM'T.
(DOC. NO. 20140194484 O.P.R.)

15' ENGINEERED VEGETATIVE FILTER STRIP

26' ACCESS EASEMENT

DA6 0.029

16' SANITARY SEWER EASEMENT
(VOL. 9654, PG. 81 D.P.R.)

SCALE: 1" = 50'

LEGEND

- STRUCTURES IC
- PARKING IC
- OTHER IC
- 15' ENGINEERED VEGETATIVE FILTER STRIP
- FLOW ARROW
- DA1 0.050 — AREA / ACREAGE

Westwood
COURSEN-KOEHLER
a division of Westwood
1718 Dry Creek Way, Suite 110 • San Antonio, Texas 78259
Tel: 210.285.8300 • Fax: 210.855.5530
TBPE Firm No. F-11756 • TBPLS Firm No. 10194064
www.westwoodps.com

AUTOZONE STORE 5196
SAN ANTONIO, TEXAS

IMPERVIOUS COVER EXHIBIT

JOB NO.:	23362.00
DATE:	01/22/2020
DRAWN:	AML

File: N:\0023362.00\3 Civil\TCEQ\WPAP\Report Attachments & Exhibits\Impervious Cover Exhibit.dwg

ATTACHMENT F
TSS CALCULATIONS

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: AutoZone # 5196
Date Prepared: February 10, 2020

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$

where:

$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	Bexar	
Total project area included in plan * =	1.27	acres
Predevelopment impervious area within the limits of the plan * =	0.01	acres
Total post-development impervious area within the limits of the plan* =	0.81	acres
Total post-development impervious cover fraction * =	0.64	
P =	30	inches
$L_{M\ TOTAL\ PROJECT}$ =	652	lbs.
Number of drainage basins / outfalls areas leaving the plan area =	7	

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. =	DA1/DA2	
Total drainage basin/outfall area =	0.58	acres
Predevelopment impervious area within drainage basin/outfall area =	0.00	acres
Post-development impervious area within drainage basin/outfall area =	0.51	acres
Post-development impervious fraction within drainage basin/outfall area =	0.88	
$L_{M\ THIS\ BASIN}$ =	414	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP =	JF	
Removal efficiency =	86	percent

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

where:

A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	0.58	acres
A_I =	0.51	acres
A_P =	0.07	acres
L_R =	454	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ =	454	lbs.
F =	1.00	

6. Calculate Treated Flow required by the BMP Type for this drainage basin / outfall area.

Offsite area draining to BMP =	0.00	acres
Offsite impervious cover draining to BMP =	0.00	acres

Calculations from RG-348 Pages Section 3

Rainfall Intensity =	4.00	inches per hour
Effective Area =	0.46	acres
Cartridge Length =	40	inches
Peak Treatment Flow Required =	1.85	cubic feet per second

7. Jellyfish
Designed as Required in RG-348 Section 3.2.22

Flow Through Jellyfish Size

Jellyfish Size for Flow-Based Configuration =	JFPD0808-13-3	
Jellyfish Treatment Flow Rate =	1.94	cfs

ATTACHMENT F
TSS CALCULATIONS

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: AutoZone #5196
Date Prepared: February 10, 2020

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$

where:

$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	**Bexar**	
Total project area included in plan * =	**1.27**	acres
Predevelopment impervious area within the limits of the plan * =	**0.01**	acres
Total post-development impervious area within the limits of the plan* =	**0.81**	acres
Total post-development impervious cover fraction * =	**0.64**	
P =	**30**	inches
$L_{M\ TOTAL\ PROJECT}$ =	**652**	lbs.

Number of drainage basins / outfalls areas leaving the plan area = **7**

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. =	**DA3**	
Total drainage basin/outfall area =	**0.005**	acres
Predevelopment impervious area within drainage basin/outfall area =	**0.00**	acres
Post-development impervious area within drainage basin/outfall area =	**0.005**	acres
Post-development impervious fraction within drainage basin/outfall area =	**1.00**	
$L_{M\ THIS\ BASIN}$ =	**4**	lbs.

ATTACHMENT F
TSS CALCULATIONS

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: AutoZone #5196
Date Prepared: February 10, 2020

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$

where:

$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	**Bexar**	
Total project area included in plan * =	**1.27**	acres
Predevelopment impervious area within the limits of the plan * =	**0.01**	acres
Total post-development impervious area within the limits of the plan* =	**0.81**	acres
Total post-development impervious cover fraction * =	**0.64**	
P =	**30**	inches
$L_{M\ TOTAL\ PROJECT}$ =	**652**	lbs.
Number of drainage basins / outfalls areas leaving the plan area =	**7**	

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. =	**DA4**	
Total drainage basin/outfall area =	**0.193**	acres
Predevelopment impervious area within drainage basin/outfall area =	**0.00**	acres
Post-development impervious area within drainage basin/outfall area =	**0.193**	acres
Post-development impervious fraction within drainage basin/outfall area =	**1.000**	
$L_{M\ THIS\ BASIN}$ =	**157**	lbs.

3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **Vegetated Filter Strips**
Removal efficiency = **85** percent

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: $L_R = (\text{BMP efficiency}) \times P \times (A_I \times 34.6 + A_P \times 0.54)$

where:

A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	**0.19**	acres
A_I =	**0.19**	acres
A_P =	**0.00**	acres
L_R =	**170**	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ = **157** lbs.

F = **0.92**

16. Vegetated Filter Strips Designed as Required in RG-348 Pages 3-55 to 3-57

There are no calculations required for determining the load or size of vegetative filter strips.
The 80% removal is provided when the contributing drainage area does not exceed 72 feet (direction of flow) and the sheet flow leaving the impervious cover is directed across 15 feet of engineered filter strips with maximum slope of 20% or across 50 feet of natural vegetation with a maximum slope of 10%. There can be a break in grade as long as no slope exceeds 20%.

If vegetative filter strips are proposed for an interim permanent BMP, they may be sized as described on Page 3-56 of RG-348.

ATTACHMENT F
TSS CALCULATIONS

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: AutoZone #5196
Date Prepared: February 10, 2020

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$

where:

$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	**Bexar**	
Total project area included in plan * =	**1.27**	acres
Predevelopment impervious area within the limits of the plan * =	**0.01**	acres
Total post-development impervious area within the limits of the plan* =	**0.81**	acres
Total post-development impervious cover fraction * =	**0.64**	
P =	**30**	inches
$L_{M\ TOTAL\ PROJECT}$ =	**652**	lbs.

Number of drainage basins / outfalls areas leaving the plan area = **7**

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. =	**DA5**	
Total drainage basin/outfall area =	**0.064**	acres
Predevelopment impervious area within drainage basin/outfall area =	**0.00**	acres
Post-development impervious area within drainage basin/outfall area =	**0.000**	acres
Post-development impervious fraction within drainage basin/outfall area =	**0.000**	
$L_{M\ THIS\ BASIN}$ =	**0**	lbs.

ATTACHMENT F
TSS CALCULATIONS

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: AutoZone #5196
Date Prepared: February 10, 2020

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$

where:

$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	**Bexar**	
Total project area included in plan * =	**1.27**	acres
Predevelopment impervious area within the limits of the plan * =	**0.01**	acres
Total post-development impervious area within the limits of the plan* =	**0.81**	acres
Total post-development impervious cover fraction * =	**0.64**	
P =	**30**	inches
$L_{M\ TOTAL\ PROJECT}$ =	**652**	lbs.

Number of drainage basins / outfalls areas leaving the plan area = **7**

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. =	**DA6**	
Total drainage basin/outfall area =	**0.029**	acres
Predevelopment impervious area within drainage basin/outfall area =	**0.00**	acres
Post-development impervious area within drainage basin/outfall area =	**0.029**	acres
Post-development impervious fraction within drainage basin/outfall area =	**1.00**	
$L_{M\ THIS\ BASIN}$ =	**24**	lbs.

ATTACHMENT F
TSS CALCULATIONS

Texas Commission on Environmental Quality

TSS Removal Calculations 04-20-2009

Project Name: AutoZone #5196
Date Prepared: February 10, 2020

1. The Required Load Reduction for the total project: Calculations from RG-348 Pages 3-27 to 3-30

Page 3-29 Equation 3.3: $L_M = 27.2(A_N \times P)$

where:

$L_{M\ TOTAL\ PROJECT}$ = Required TSS removal resulting from the proposed development = 80% of increased load
A_N = Net increase in impervious area for the project
P = Average annual precipitation, inches

Site Data: Determine Required Load Removal Based on the Entire Project

County =	**Bexar**	
Total project area included in plan * =	**1.27**	acres
Predevelopment impervious area within the limits of the plan * =	**0.01**	acres
Total post-development impervious area within the limits of the plan* =	**0.81**	acres
Total post-development impervious cover fraction * =	**0.64**	
P =	**30**	inches

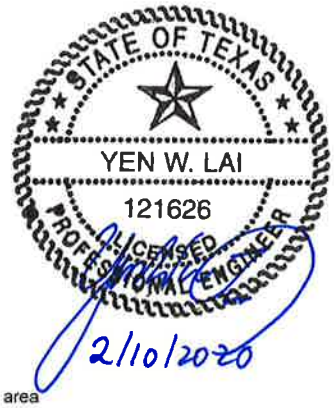
$L_{M\ TOTAL\ PROJECT}$ = **652** lbs.

Number of drainage basins / outfalls areas leaving the plan area = **7**

2. Drainage Basin Parameters (This information should be provided for each basin):

Drainage Basin/Outfall Area No. = DA7

Total drainage basin/outfall area =	**0.404**	acres
Predevelopment impervious area within drainage basin/outfall area =	**0.01**	acres
Post-development impervious area within drainage basin/outfall area =	**0.073**	acres
Post-development impervious fraction within drainage basin/outfall area =	**0.181**	
$L_{M\ THIS\ BASIN}$ =	**53**	lbs.



3. Indicate the proposed BMP Code for this basin.

Proposed BMP = **Vegetated Filter Strips**
Removal efficiency = **85** percent

4. Calculate Maximum TSS Load Removed (L_R) for this Drainage Basin by the selected BMP Type.

RG-348 Page 3-33 Equation 3.7: L_R = (BMP efficiency) x P x (A_I x 34.6 + A_P x 0.54)

where:

A_C = Total On-Site drainage area in the BMP catchment area
A_I = Impervious area proposed in the BMP catchment area
A_P = Pervious area remaining in the BMP catchment area
L_R = TSS Load removed from this catchment area by the proposed BMP

A_C =	**0.40**	acres
A_I =	**0.07**	acres
A_P =	**0.33**	acres
L_R =	**69**	lbs

5. Calculate Fraction of Annual Runoff to Treat the drainage basin / outfall area

Desired $L_{M\ THIS\ BASIN}$ = **44** lbs.

F = **0.64**

16. Vegetated Filter Strips Designed as Required in RG-348 Pages 3-55 to 3-57

There are no calculations required for determining the load or size of vegetative filter strips.
The 80% removal is provided when the contributing drainage area does not exceed 72 feet (direction of flow) and the sheet flow leaving the impervious cover is directed across 15 feet of engineered filter strips with maximum slope of 20% or across 50 feet of natural vegetation with a maximum slope of 10%. There can be a break in grade as long as no slope exceeds 20%.

If vegetative filter strips are proposed for an interim permanent BMP, they may be sized as described on Page 3-56 of RG-348.

Attachment G – Inspection, Maintenance, Repair and Retrofit Plan

The following sheets include the inspection, maintenance, repair, and retrofit plans for the following:

- Contech Jellyfish Filter
- Engineered Vegetative Filter Strip

It should be noted that the timing and procedures presented herein are general guidelines. Adjustments to the timing and procedures may have to be made depending on project specific characteristics as well as weather related conditions.

Engineer Certification:

I certify that the suggested inspection, maintenance, repair, and retrofit plans provided within ATTACHMENT G of the PERMANENT STORMWATER SECTION were prepared by the engineer designing the permanent BMPs and measures.

Yen W. Lai
Print Name of Engineer

Signature of Engineer

Date 1/09/2020

MAINTENANCE PLAN & SCHEDULE
JELLYFISH FILTER SYSTEM

PROJECT NAME:	AutoZone #5196
ADDRESS:	Bulverde Rd. & US HWY 281N
CITY, STATE ZIP:	San Antonio, Texas 78258

The Jellyfish Filter System should be inspected at a minimum on a quarterly basis during the first year of operation and at a minimum on an annual basis in subsequent years and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend on site specific activities. The attached manufacturer recommended guidelines are included in the *Maintenance Plan and Schedule* and should be followed.

Inspections: Inspection of the storage component should occur at a minimum on a quarterly basis during the first year of service and at a minimum on an annual basis in subsequent years. Inspection is also recommended after each major storm event and required immediately after an upstream oil, fuel or other chemical spill. The inspection should be of the structure and media.

Debris and Litter Removal: The Jellyfish Filter System must be cleaned annually. Cleaning includes removal and appropriate disposal of all water, sediment, oil and grease, and debris that has accumulated within the unit. The Jellyfish Filter is inspected and maintained by professional vacuum cleaning service providers with experience in the maintenance of underground tanks, sewers and catch basins.

Each Maintenance session should include the following:

Required maintenance for the Jellyfish Filter is based upon results of the most recent inspection, historical maintenance records, or the site specific water quality management plan; whichever is more frequent. In general, maintenance requires some combination of the following:

1. Sediment removal for depths reaching 12 inches or greater, or within 3 years of the most recent sediment cleaning, whichever occurs sooner.

2. Floatable trash, debris, and oil removal.

3. Deck cleaned and free from sediment.

4. Filter cartridges rinsed and re-installed as required by the most recent inspection results, or within 12 months of the most recent filter rinsing, whichever occurs sooner.

5. Replace tentacles if rinsing does not restore adequate hydraulic capacity, remove accumulated sediment, or if damaged or missing. It is recommended that tentacles should remain in service no longer than 5 years before replacement.

6. Damaged or missing cartridge deck components must be repaired or replaced as indicated by results of the most recent inspection.

7. The unit must be cleaned out and filter cartridges inspected immediately after an upstream oil, fuel, or chemical spill. Filter cartridge tentacles should be replaced if damaged or compromised by the spill.

"Proper" disposal of accumulated silt shall be accomplished following the Texas Commission on Environmental Quality (TCEQ) and City of San Antonio guidelines (if within jurisdiction of City of San Antonio) and specifications.

After all inspections, results shall be recorded and maintained. Records should be made available on request by TCEQ and/or New Braunfels officials. Upon transfer of ownership or maintenance responsibility: The seller must inform the buyer of all requirements of the BMP maintenance. TCEQ must be notified and receive the form "TCEQ-10623 change in responsibility for maintenance on permanent Best Management Practices and Measures". In addition, TCEQ and SAWS Resource Protection Division shall receive a signed, dated copy of this maintenance plan from the new owner.

Filter cartridges should be tested for adequate flow rate, every 12 months and cleaned and re-commissioned, or replaced if necessary. A manual backflush must be performed on a single draindown cartridge using a Jellyfish Cartridge Backflush Pipe (described in the Jellyfish® Filter Owner's Manual). If the time required to drain 14 gallons of backflush water from the Backflush Pipe (from top of pipe to the top of the open flapper valve) exceeds 15 seconds, it is recommended to perform a manual backflush on each of the cartridges. After the manual backflush, the draindown test should be repeated on a single cartridge to determine if the cartridge can drain 14 gallons of water in 15 seconds. If the cartridge still does not achieve the design flow rate, it must be replaced.
This cartridge cleaning procedure is performed by removing the cartridge from the cartridge deck and externally rinsing the filtration tentacles using a low-pressure water sprayer, as described in the Jellyfish® Filter Owner's Manual. If this procedure is performed within the structure, the cartridge or individual filtration tentacles should be rinsed while safely suspended over the maintenance access wall opening in the cartridge deck, such that rinsate flows into the lower chamber of the Jellyfish® Filter. If the rinsing procedure is performed outside the structure, the cartridge or individual filtration tentacles should be rinsed in a suitable basin such as a plastic barrel or tub, and rinsate subsequently poured into the maintenance access wall opening in the cartridge deck. Sediment is subsequently removed from the lower chamber by standard vacuum service.
Detailed inspection and maintenance procedures are found in Chapters 3 through 7 in the included Jellyfish Filter Owner's Manual.

The applicant is responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another's entity having ownership or control of the property (such as without limitation, an owner's association, new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity assumes such obligation in writing or ownership is transferred.

Contech Jellyfish Filter System Sample Inspection & Maintenance Log

Inspection / Maintenance Completion – Summary

Company Name: _____

Company Address: _____

City/State/Zip: _____

Phone: _____

Engineer: _____

Engineers Address: _____

City/State/Zip: _____

Phone: _____

Property Owner: _____

Jellyfish Model: _____

Monitoring / Maintenance Table

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Oil Depth (inches)												
Sediment Depth (inches)												
Completed By												
Date												
Floatables (optional)												

An amended copy of this document will be provided to the Texas Commission on Environmental Quality within thirty (30) days of any changes in the following information.

I hereby certify that the monitoring and maintenance of the Jellyfish Filter unit will be completed in accordance with the directions of the Jellyfish inspection and maintenance plan.

Owner / Responsible Party:

Contact Person: Guadeloupe Cruz

Entity: AutoZone Development Parts, Inc.

Mailing Address: 123 South Front Street

City, State and Zip: Memphis, TN 38103

Telephone: (901) 495-6500 Facsimile:

Email: Carl.helton@autozone.com

Mitchell Major
Signature of Owner/Responsible Party

02/04/2020
Date

Jennie E. Anderson
Signature of Owner/Responsible Party

02/04/2020
Date

MAINTENANCE PLAN & SCHEDULE
VEGETATIVE FILTER STRIPS

PROJECT NAME: AutoZone #5196

ADDRESS: Bulverde Rd. & US HWY 281 N

CITY, STATE ZIP: San Antonio, Texas 78258

The care and maintenance a vegetated filter strip receives in the first few months are keys to establishing the viability of the filter strips. Once a vegetated area is well established, little additional maintenance is generally necessary, however, all vegetated Best Management Practices (BMPs) require some basic maintenance including:

Pest Management: An Integrated Pest Management Plan (IPM) should be developed for vegetated areas. This plan should specify how problem insects and weeds will be controlled with minimal or no use of insecticides and herbicides.

Seasonal Mowing and Lawn Care: If the filter strip is made of turf grass, it should be mowed as needed to limit vegetation height to 18 inches, using a mulching mower (or removal of clipping). If native grasses are used, the filter may require less frequent mowing, but a minimum of twice annually. Grass clipping and brush debris should not be deposited on vegetated filter strip areas. Regular mowing should also include weed control practices, however herbicide use should be kept to a minimum. Healthy grass may be maintained without using fertilizers because runoff usually contains sufficient nutrients. Irrigation of the site may also help assure a dense and healthy vegetative cover.

Inspection: Inspection of filter strips should be done at least twice annually for erosion or damage to vegetation; however, additional inspections after periods of heavy runoff are most desirable. The strip should be checked for uniformity of grass cover, debris and litter, and areas of sediment accumulation. More frequent inspections of the grass cover will be made during the first few years after establishment to determine if any problems are developing, and to plan for long-term restorative maintenance needs. Bare spots and areas of erosion identified during semi-annual inspections should be replanted and restored to meet specifications. Construction of a level spreader device may be necessary to reestablish shallow overland flow.

Debris and Litter Removal: Any filter strip or filter strip structures (i.e. leveled spreaders) should be kept free of obstructions to reduce floatables from being flushed downstream, and for aesthetic reasons. The need for this practice will be determined through periodic inspection, but will be performed no less than four (4) times per year.

Sediment Removal: Sediment removal is not normally required in filter strips. However, sediment may accumulate along the upstream boundary of the strip preventing uniform overland flow. Excess sediment should be removed by hand, with flat-bottomed shovels, or light construction equipment.

Grass Re-seeding and Mulching: A healthy dense grass should be maintained on the filter strip. If areas are eroded, they should be filled, compacted and reseeded so that the final grade is level. Grass damaged during the sediment removal process should be promptly replaced using the same seed mix used during filter strip establishment. Flow should be diverted, if possible, from the damaged areas until the grass is firmly established. Bare spots and areas of erosion identified during semi-annual inspections must be replanted and restored to meet specifications. Corrective maintenance, such as weeding or replanting should be done more frequently in the first two to three years after installation to ensure stabilization. Dense vegetation may require irrigation immediately after planting, and during dry periods, particularly as the vegetation is initially established.

"Proper" disposal of accumulated silt shall be accomplished following the Texas Commission on Environmental Quality (TCEQ) and City of San Antonio guidelines (if within jurisdiction of City of San Antonio) and specifications.

After all inspections, results shall be recorded and maintained. Records should be made available on request by TCEQ and/or SAWS officials. Upon transfer of ownership or maintenance responsibility: The seller must inform the buyer of all requirements of the BMP maintenance. TCEQ must be notified and receive the form "TCEQ-10623 change in responsibility for maintenance on permanent Best Management Practices and Measures". In addition, TCEQ and SAWS Resource Protection Division shall receive a signed, dated copy of this maintenance plan from the new owner.

The applicant is responsible for maintaining the permanent BMPs after construction until such time as the maintenance obligation is either assumed in writing by another's entity having ownership or control of the property (such as without limitation, an owner's association, new property owner or lessee, a district, or municipality) or the ownership of the property is transferred to the entity assumes such obligation in writing or ownership is transferred.

An amended copy of this document will be provided to the Texas Commission on Environmental Quality within thirty (30) days of any changes in the following information.

Owner / Responsible Party:

Contact Person: GUADALUPE CRUZ

Entity: AutoZone Parts, Inc., a Nevada corporation

Mailing Address: 123 South Front Street

City, State and Zip: Memphis, TN 38103

Telephone: (630) 931-7677 Facsimile: _____

Email: GUADALUPE.CRUZ@AUTOZONE.COM

AutoZone Parts, Inc., a Nevada corporation

By: _____
Timothy J. Goddard

Its: Vice President

By: _____

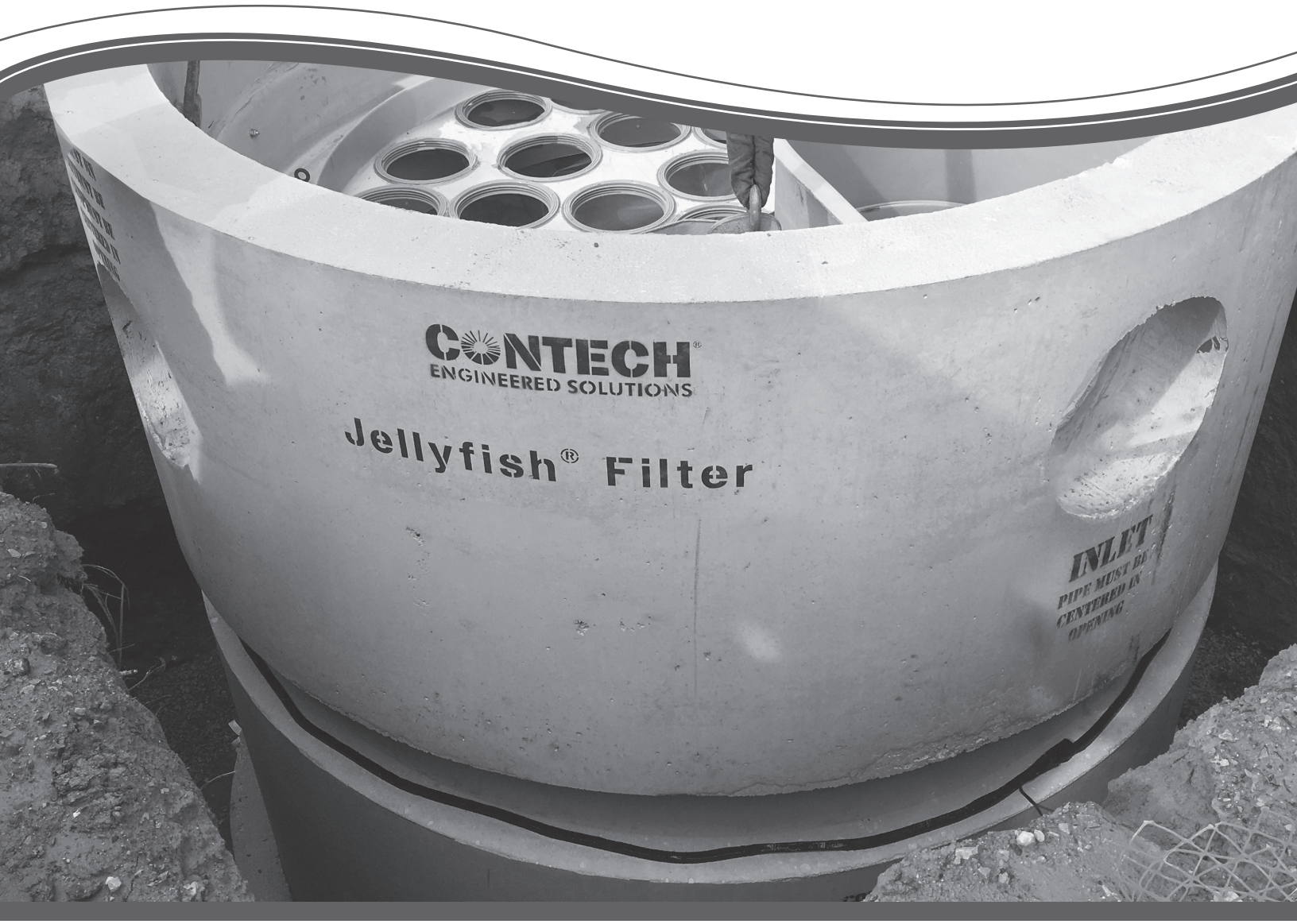
Its: Charles Blank
VP Stores

Date _____

GP CHAS

CONTECH®
ENGINEERED SOLUTIONS

Jellyfish® Filter
Owner's Manual



Jellyfish® Filter

Table of Contents

THANK YOU FOR PURCHASING THE JELLYFISH® FILTER!

Contech Engineered Solutions would like to thank you for selecting the Jellyfish Filter to meet your project's stormwater treatment needs. With proper inspection and maintenance, the Jellyfish Filter is designed to deliver ongoing, high levels of stormwater pollutant removal.

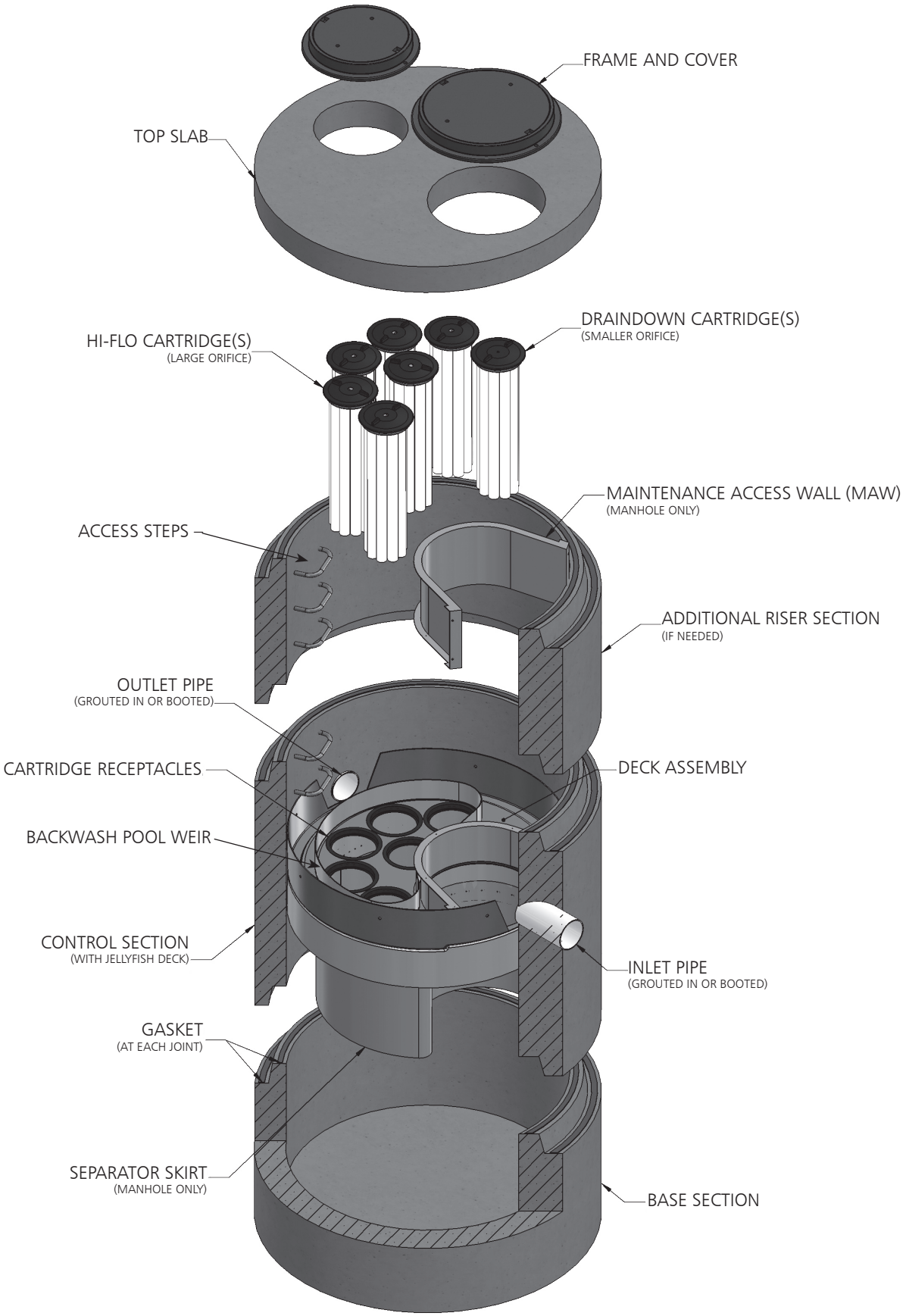
If you have any questions, please feel free to call us or e-mail us:

Contech Engineered Solutions
9025 Centre Pointe Drive, Suite 400 | West Chester, OH 45069
513-645-7000 | 800-338-1122
www.ContechES.com
info@conteches.com

Jellyfish Filter Patents

The Jellyfish Filter is protected by one or more of the following patents:

U.S. Patent Nos. 8,123,935; 8,287,726; 8,221,618
Australia Patent Nos. 2008, 286, 748
Canadian Patent Nos. 2,696,482;
Japanese Patent No. 5,646,681
Korean Patent Nos. 10-1287539; 10-1400257
New Zealand Patent Nos. 583,461; 604,227
South African Patent No. 2010,01068
*other patents pending


FRAME AND COVER
TOP SLAB
DRAINDOWN CARTRIDGE(S)
(SMALLER ORIFICE)
HI-FLO CARTRIDGE(S)
(LARGE ORIFICE)
MAINTENANCE ACCESS WALL (MAW)
(MANHOLE ONLY)
ACCESS STEPS
ADDITIONAL RISER SECTION
(IF NEEDED)
OUTLET PIPE
(GROUTED IN OR BOOTED)
CARTRIDGE RECEPTACLES
DECK ASSEMBLY
BACKWASH POOL WEIR
CONTROL SECTION
(WITH JELLYFISH DECK)
INLET PIPE
(GROUTED IN OR BOOTED)
GASKET
(AT EACH JOINT)
SEPARATOR SKIRT
(MANHOLE ONLY)
BASE SECTION

WARNINGS / CAUTION

1. FALL PROTECTION may be required.
2. WATCH YOUR STEP if standing on the Jellyfish Filter Deck at any time; Great care and safety must be taken while walking or maneuvering on the Jellyfish Filter Deck. Attentive care must be taken while standing on the Jellyfish Filter Deck at all times to prevent stepping onto a lid, into or through a cartridge hole or slipping on the deck.
3. The Jellyfish Filter Deck can be SLIPPERY WHEN WET.
4. If the Top Slab, Covers or Hatches have not yet been installed, or are removed for any reason, great care must be taken to NOT DROP ANYTHING ONTO THE JELLYFISH FILTER DECK. The Jellyfish Filter Deck and Cartridge Receptacle Rings can be damaged under high impact loads.This type of activity voids all warranties. All damaged items to be replaced at owner's expense.
5. Maximum deck load 2 persons, total weight 450 lbs.

Safety Notice

Jobsite safety is a topic and practice addressed comprehensively by others. The inclusions here are intended to be reminders to whole areas of Safety Practice that are the responsibility of the Owner(s), Manager(s) and Contractor(s). OSHA and Canadian OSH, and Federal, State/Provincial, and Local Jurisdiction Safety Standards apply on any given site or project. The knowledge and applicability of those responsibilities is the Contractor's responsibility and outside the scope of Contech Engineered Solutions.

Confined Space Entry

Secure all equipment and perform all training to meet applicable local and OSHA regulations regarding confined space entry. It is the Contractor's or entry personnel's responsibility to proceed safely at all times.

Personal Safety Equipment

Contractor is responsible to provide and wear appropriate personal protection equipment as needed including, but not limited to safety boots, hard hat, reflective vest, protective eyewear, gloves and fall protection equipment as necessary. Make sure all equipment is staffed with trained and/or certified personnel, and all equipment is checked for proper operation and safety features prior to use.

- Fall protection equipment
- Eye protection
- Safety boots
- Ear protection
- Gloves
- Ventilation and respiratory protection
- Hard hat
- Maintenance and protection of traffic plan

Chapter 1

1.0 – Owner Specific Jellyfish Filter Product Information

Below you will find a reference page that can be filled out according to your Jellyfish Filter specification to help you easily inspect, maintain and order parts for your system.

Owner Name:	
Phone Number:	
Site Address:	
Site GPS Coordinates/unit location:	
Unit Location Description:	
Jellyfish Filter Model No.:	
Contech Projetct & Sequence Number	
No. of Hi-Flo Cartridges	
No. of Cartridges:	
Length of Draindown Cartridges:	
No. of Blank Cartridge Lids:	
Bypass Configuration (Online/Offline):	

Notes:

_____

_____

_____

_____

Chapter 2

2.0 – Jellyfish Filter System Operations and Functions

The Jellyfish Filter is an engineered stormwater quality treatment technology that removes a high level and wide variety of stormwater pollutants. Each Jellyfish Filter cartridge consists of eleven membrane - encased filter elements ("filtration tentacles") attached to a cartridge head plate. The filtration tentacles provide a large filtration surface area, resulting in high flow and high pollutant removal capacity.

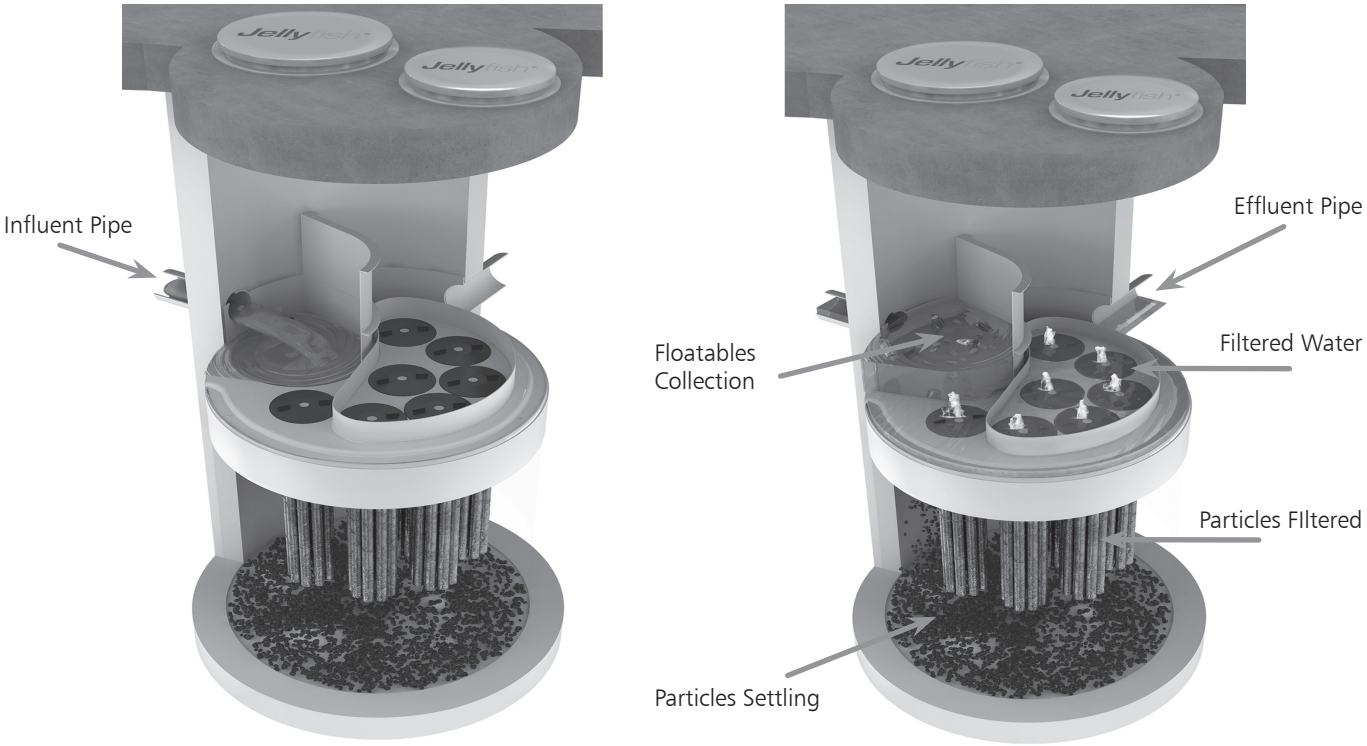
The Jellyfish Filter functions are depicted in Figure 1 below.

FIGURE 1

Jellyfish Filter Treatment Functions

Membrane Filtration

Section View with Maintenance Access Wall (MAW) Cutaway



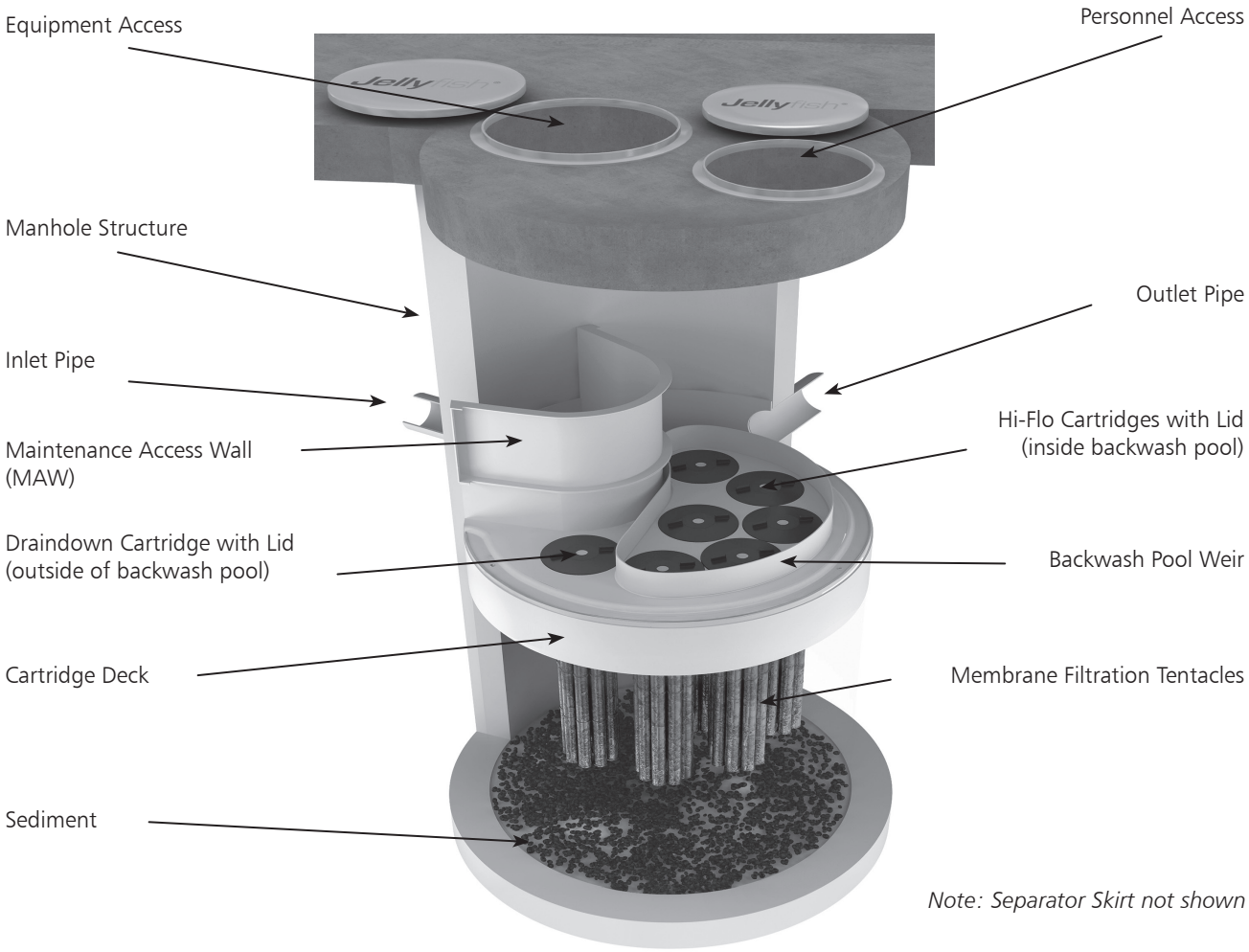
Jellyfish Filter cartridges are backwashed after each peak storm event, which removes accumulated sediment from the membranes. This backwash process extends the service life of the cartridges and increases the time between maintenance events.

For additional details on the operation and pollutant capabilities of the Jellyfish Filter please refer to additional details on our website at www.ContechES.com.

2.1 – Components and Cartridges

The Jellyfish Filter and components are depicted in Figure 2 below.

FIGURE 2 **Jellyfish Filter Components**



Tentacles are available in various lengths as depicted in Table 1 below.

Table 1 – Cartridge Lengths / Weights and Cartridge Lid Orifice Diameters

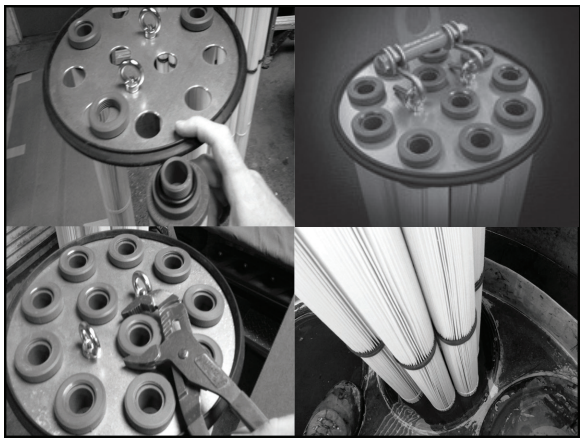
Cartridge Lengths	Dry Weight	Hi-Flo Orifice Diameter	Draindown Orifice Diameter
15 inches (381 mm)	10 lbs (4.5 kg)	35 mm	20 mm
27 inches (686 mm)	14.5 lbs (6.6 kg)	45 mm	25 mm
40 inches (1,016 mm)	19.5 lbs (8.9 kg)	55 mm	30 mm
54 inches (1,372 mm)	25 lbs (11.4 kg)	70 mm	35 mm

2.2 – Jellyfish Membrane Filtration Cartridge Assembly

The Jellyfish Filter utilizes multiple membrane filtration cartridges. Each cartridge consists of removable cylindrical filtration "tentacles" attached to a cartridge head plate. Each filtration tentacle has a threaded pipe nipple and o-ring. To attach, insert the top pipe nipples with the o-ring through the head plate holes and secure with locking nuts. Hex nuts to be hand tightened and checked with a wrench as shown below.

2.3 – Jellyfish Membrane Filtration Cartridge Installation

- Cartridge installation will be performed by trained individuals and coordinated with the installing site Contractor. Flow diversion devices are required to be in place until the site is stabilized (final paving and landscaping in place). Failure to address this step completely will reduce the time between required maintenance.
- Descend to the cartridge deck (see Safety Notice and page 3).
- Refer to Contech's submittal drawings to determine proper quantity and placement of Hi-Flo, Draindown and Blank cartridges with appropriate lids. Lower the Jellyfish membrane filtration cartridges into the cartridge receptacles within the cartridge deck. It is possible that not all cartridge receptacles will be filled with a filter cartridge. In that case, a blank headplate and blank cartridge lid (no orifice) would be installed.



Cartridge Assembly

Do not force the tentacles down into the cartridge receptacle, as this may damage the membranes. Apply downward pressure on the cartridge head plate to seat the lubricated rim gasket (thick circular gasket surrounding the circumference of the head plate) into the cartridge receptacle. (See Figure 3 for details on approved lubricants for use with rim gasket.)

- Examine the cartridge lids to differentiate lids with a small orifice, a large orifice, and no orifice.
  - Lids with a small orifice are to be inserted into the Draindown cartridge receptacles, outside of the backwash pool weir.
  - Lids with a large orifice are to be inserted into the Hi-Flo cartridge receptacles within the backwash pool weir.
  - Lids with no orifice (blank cartridge lids) and a blank headplate are to be inserted into unoccupied cartridge receptacles.
- To install a cartridge lid, align both cartridge lid male threads with the cartridge receptacle female threads before rotating approximately 1/3 of a full rotation until fimrly seated. Use of an approved rim gasket lubricant may faciliate installation.

3.0 Inspection and Maintenance Overview

The primary purpose of the Jellyfish® Filter is to capture and remove pollutants from stormwater runoff. As with any filtration system, these pollutants must be removed to maintain the filter's maximum treatment performance. Regular inspection and maintenance are required to insure proper functioning of the system.
Maintenance frequencies and requirements are site specific and vary depending on pollutant loading. Additional maintenance activities may be required in the event of non-storm event runoff, such as base-flow or seasonal flow, an upstream chemical spill or due to excessive sediment loading from site erosion or extreme runoff events. It is a good practice to inspect the system after major storm events.
Inspection activities are typically conducted from surface observations and include:

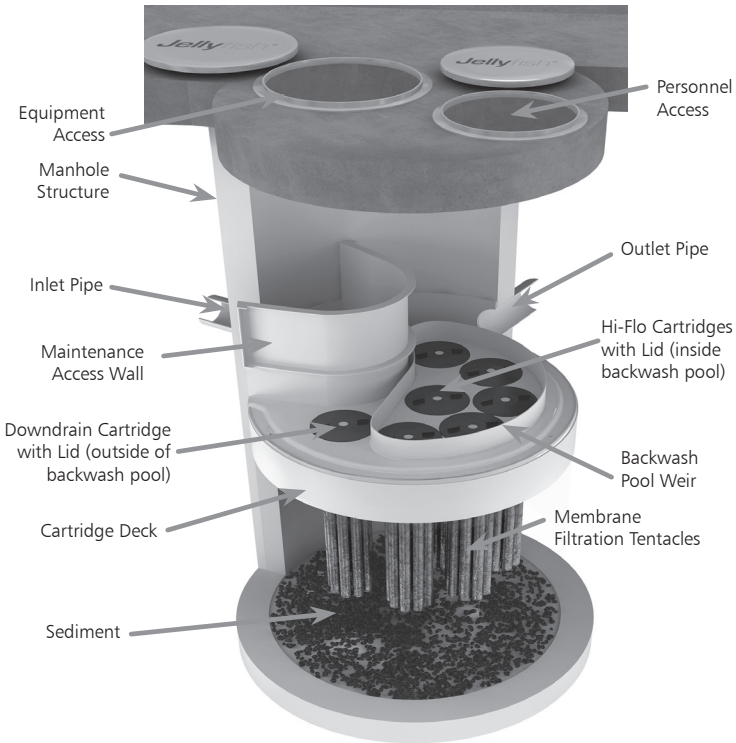
- Observe if standing water is present
- Observe if there is any physical damage to the deck or cartridge lids
- Observe the amount of debris in the Maintenance Access Wall (MAW) or inlet bay for vault systems

Maintenance activities include:

- Removal of oil, floatable trash and debris
- Removal of collected sediments
- Rinsing and re-installing the filter cartridges
- Replace filter cartridge tentacles, as needed

4.0 Inspection Timing

Inspection of the Jellyfish Filter is key in determining the maintenance requirements for, and to develop a history of, the site's pollutant loading characteristics. In general, inspections should be performed at the times indicated below; ***or per the approved project stormwater quality documents (if applicable), whichever is more frequent***.



Note: Separator Skirt not shown

1. A minimum of quarterly inspections during the first year of operation to assess the sediment and floatable pollutant accumulation, and to ensure proper functioning of the system.
2. Inspection frequency in subsequent years is based on the inspection and maintenance plan developed in the first year of operation. Minimum frequency should be once per year.
3. Inspection is recommended after each major storm event.
4. Inspection is required immediately after an upstream oil, fuel or other chemical spill.

5.0 Inspection Procedure

The following procedure is recommended when performing inspections:

1. Provide traffic control measures as necessary.
2. Inspect the MAW or inlet bay for floatable pollutants such as trash, debris, and oil sheen.
3. Measure oil and sediment depth in several locations, by lowering a sediment probe until contact is made with the floor of the structure. Record sediment depth, and presences of any oil layers.
4. Inspect cartridge lids. Missing or damaged cartridge lids to be replaced.
5. Inspect the MAW (where appropriate), cartridge deck and receptacles, and backwash pool weir, for damaged or broken components.

5.1 Dry weather inspections

- Inspect the cartridge deck for standing water, and/or sediment on the deck.
- No standing water under normal operating conditions.
- Standing water inside the backwash pool, but not outside the backwash pool indicates, that the filter cartridges need to be rinsed.

Inspection Utilizing Sediment Probe

- Standing water outside the backwash pool is not anticipated and may indicate a backwater condition caused by high water elevation in the receiving water body, or possibly a blockage in downstream infrastructure.
- Any appreciable sediment (≥1/16") accumulated on the deck surface should be removed.

5.2 Wet weather inspections

- Observe the rate and movement of water in the unit. Note the depth of water above deck elevation within the MAW or inlet bay.
- Less than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges (i.e. cartridges located outside the backwash pool).
- Greater than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges and each of the hi-flo cartridges (i.e. cartridges located inside the backwash pool), and water should be overflowing the backwash pool weir.
- 18 inches or greater and relatively little flow is exiting the cartridge lids and outlet pipe, this condition indicates that the filter cartridges need to be rinsed.

6.0 Maintenance Requirements

Required maintenance for the Jellyfish Filter is based upon results of the most recent inspection, historical maintenance records, or the site specific water quality management plan; whichever is more frequent. In general, maintenance requires some combination of the following:

1. Sediment removal for depths reaching 12 inches or greater, or within 3 years of the most recent sediment cleaning, whichever occurs sooner.
2. Floatable trash, debris, and oil removal.
3. Deck cleaned and free from sediment.
4. Filter cartridges rinsed and re-installed as required by the most recent inspection results, or within 12 months of the most recent filter rinsing, whichever occurs sooner.
5. Replace tentacles if rinsing does not restore adequate hydraulic capacity, remove accumulated sediment, or if damaged or missing. It is recommended that tentacles should remain in service no longer than 5 years before replacement.
6. Damaged or missing cartridge deck components must be repaired or replaced as indicated by results of the most recent inspection.
7. The unit must be cleaned out and filter cartridges inspected immediately after an upstream oil, fuel, or chemical spill. Filter cartridge tentacles should be replaced if damaged or compromised by the spill.

7.0 Maintenance Procedure

The following procedures are recommended when maintaining the Jellyfish Filter:

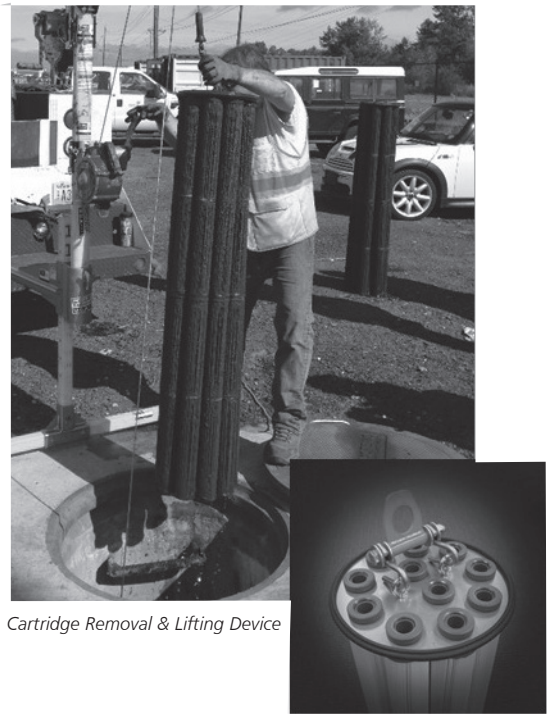
1. Provide traffic control measures as necessary.
2. Open all covers and hatches. Use ventilation equipment as required, according to confined space entry procedures. *Caution: Dropping objects onto the cartridge deck may cause damage*.
3. Perform Inspection Procedure prior to maintenance activity.
4. To access the cartridge deck for filter cartridge service, descend into the structure and step directly onto the deck. Caution: Do not step onto the maintenance access wall (MAW) or backwash pool weir, as damage may result. Note that the cartridge deck may be slippery.
5. Maximum weight of maintenance crew and equipment on the cartridge deck not to exceed 450 lbs.

7.1 Filter Cartridge Removal

1. Remove a cartridge lid.
2. Remove cartridges from the deck using the lifting loops in the cartridge head plate. Rope or a lifting device (available from Contech) should be used. ***Caution: Should a snag occur, do not force the cartridge upward as damage to the tentacles may result. Wet cartridges typically weigh between 100 and 125 lbs***.
3. Replace and secure the cartridge lid on the exposed empty receptacle as a safety precaution. Contech does not recommend exposing more than one empty cartridge receptacle at a time.

7.2 Filter Cartridge Rinsing

1. Remove all 11 tentacles from the cartridge head plate. Take care not to lose or damage the O-ring seal as well as the plastic threaded nut and connector.



Cartridge Removal & Lifting Device

2. Position tentacles in a container (or over the MAW), with the threaded connector (open end) facing down, so rinse water is flushed through the membrane and captured in the container.
3. Using the Jellyfish rinse tool (available from Contech) or a low-pressure garden hose sprayer, direct water spray onto the tentacle membrane, sweeping from top to bottom along the length of the tentacle. Rinse until all sediment is removed from the membrane. ***Caution: Do not use a high pressure sprayer or focused stream of water on the membrane. Excessive water pressure may damage the membrane***.

4. Collected rinse water is typically removed by vacuum hose.
5. Reassemble cartridges as detailed later in this document. Reuse O-rings and nuts, ensuring proper placement on each tentacle.

7.3 Sediment and Flotables Extraction

1. Perform vacuum cleaning of the Jellyfish Filter only after filter cartridges have been removed from the system. Access the lower chamber for vacuum cleaning only through the maintenance access wall (MAW) opening. Be careful not to damage the flexible plastic separator skirt that is attached to the underside of the deck on manhole systems. Do not lower the vacuum wand through a cartridge receptacle, as damage to the receptacle will result.
2. Vacuum floatable trash, debris, and oil, from the MAW opening or inlet bay. Alternatively, floatable solids may be removed by a net or skimmer.

Rinsing Cartridge with Contech Rinse Tool

3. Pressure wash cartridge deck and receptacles to remove all sediment and debris. Sediment should be rinsed into the sump area. Take care not to flush rinse water into the outlet pipe.
4. Remove water from the sump area. Vacuum or pump equipment should only be introduced through the MAW or inlet bay.
5. Remove the sediment from the bottom of the unit through the MAW or inlet bay opening.

Vacuuming Sump Through MAW

6. For larger diameter Jellyfish Filter manholes (≥8-ft) and some vaults complete sediment removal may be facilitated by removing a cartridge lid from an empty receptacle and inserting a jetting wand (not a vacuum wand) through the receptacle. Use the sprayer to rinse loosened sediment toward the vacuum hose in the MAW opening, being careful not to damage the receptacle.

7.4 Filter Cartridge Reinstallation and Replacement

1. Cartridges should be installed after the deck has been cleaned. It is important that the receptacle surfaces be free from grit and debris.
2. Remove cartridge lid from deck and carefully lower the filter cartridge into the receptacle until head plate gasket is seated squarely in receptacle. ***Caution: Do not force the cartridge downward; damage may occur.***
3. Replace the cartridge lid and check to see that both male threads are properly seated before rotating approximately 1/3 of a full rotation until firmly seated. Use of an approved rim gasket lubricant may facilitate installation. See next page for additional details.
4. If rinsing is ineffective in removing sediment from the tentacles, or if tentacles are damaged, provisions must be made to replace the spent or damaged tentacles with new tentacles. Contact Contech to order replacement tentacles.

7.5 Chemical Spills

Caution: If a chemical spill has been captured, do not attempt maintenance. Immediately contact the local hazard response agency and contact Contech.

7.6 Material Disposal

The accumulated sediment found in stormwater treatment and conveyance systems must be handled and disposed of in accordance with regulatory protocols. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals (such as pesticides and petroleum products). Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads. Sediments and water must be disposed of in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. This typically requires coordination with a local landfill for solid waste disposal. For liquid waste disposal a number of options are available including a municipal vacuum truck decant facility, local waste water treatment plant or on-site treatment and discharge.

Jellyfish Filter Components & Filter Cartridge Assembly and Installation

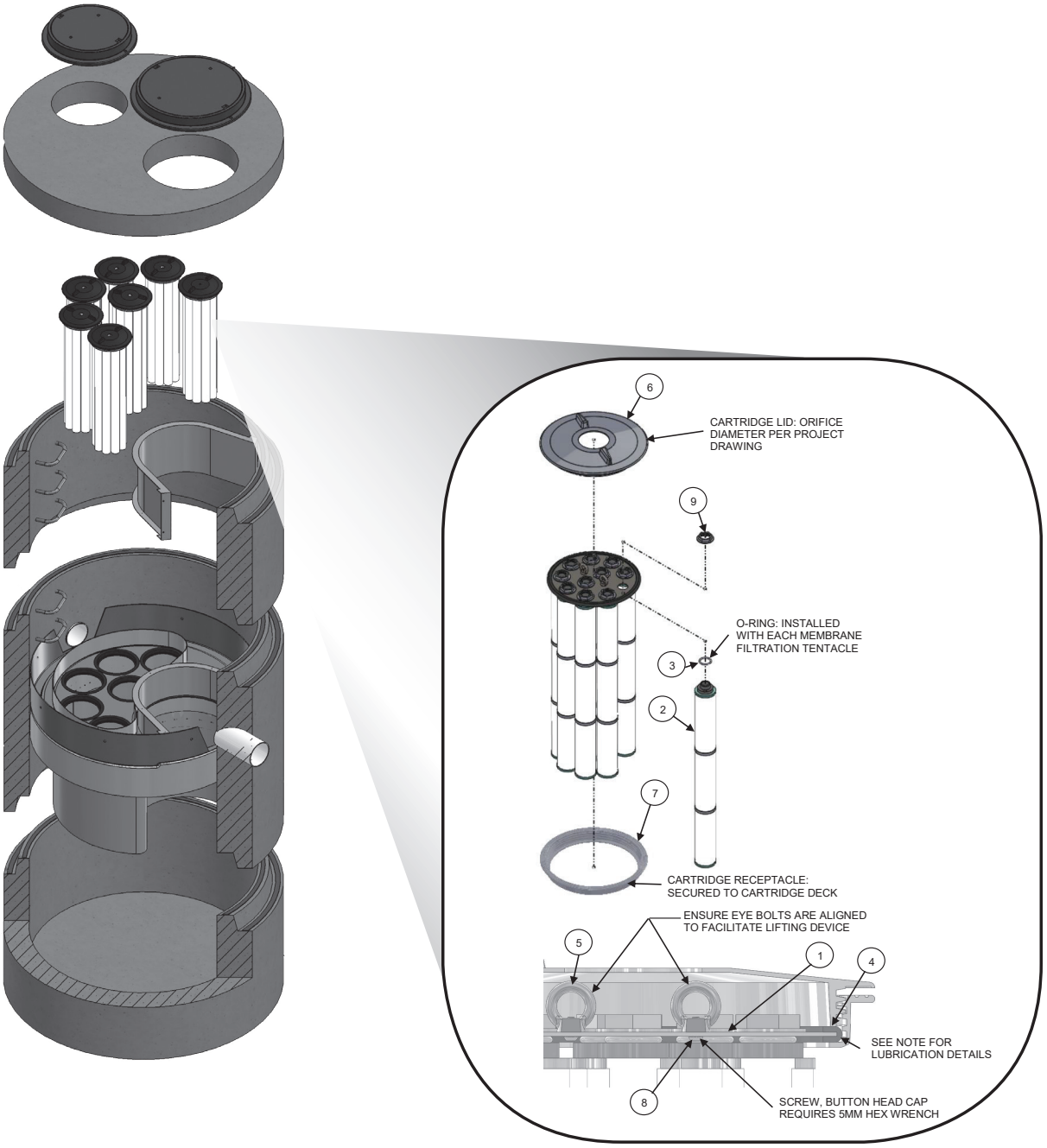


TABLE 1: BOM

ITEM NO.	DESCRIPTION
1	JF HEAD PLATE
2	JF TENTACLE
3	JF O-RING
4	JF HEAD PLATE GASKET
5	JF CARTRIDGE EYELET
6	JF 14IN COVER
7	JF RECEPTACLE
8	BUTTON HEAD CAP SCREW M6X14MM SS
9	JF CARTRIDGE NUT

TABLE 2: APPROVED GASKET LUBRICANTS

PART NO.	MFR	DESCRIPTION
78713	LA-CO	LUBRI-JOINT
40501	HERCULES	DUCK BUTTER
30600	OATEY	PIPE LUBRICANT
PSLUBXL1Q	PROSELECT	PIPE JOINT LUBRICANT

NOTES:

Head Plate Gasket Installation:
Install Head Plate Gasket (Item 4) onto the Head Plate (Item 1) and liberally apply a lubricant from Table 2: Approved Gasket Lubricants onto the gasket where it contacts the Receptacle (Item 7) and Cartridge Lid (Item 6). Follow Lubricant manufacturer's instructions.

Lid Assembly:
Rotate Cartridge Lid counter-clockwise until both male threads drop down and properly seat. Then rotate Cartridge Lid clock-wise approximately one-third of a full rotation until Cartridge Lid is firmly secured, creating a watertight seal.

Jellyfish Filter Inspection and Maintenance Log

Owner: _____ Jellyfish Model No.:_____

Location: _____ GPS Coordinates: _____

Land Use: Commercial:_____ Industrial: _____ Service Station:_____

Road/Highway:____ Airport: _____ Residential: _____ Parking Lot:_____

Date/Time:					
Inspector:					
Maintenance Contractor:					
Visible Oil Present: (Y/N)					
Oil Quantity Removed					
Floatable Debris Present: (Y/N)					
Floatable Debris removed: (Y/N)					
Water Depth in Backwash Pool					
Cartridges externally rinsed/re-commissioned: (Y/N)					
New tentacles put on Cartridges: (Y/N)					
Sediment Depth Measured: (Y/N)					
Sediment Depth (inches or mm):					
Sediment Removed: (Y/N)					
Cartridge Lids intact: (Y/N)					
Observed Damage:					
Comments:					

Attachment H – Pilot-Scale Field Testing Plan

A pilot scale field testing plan is not required; the TCEQ Technical Guidance Manual (TGM) was used to design permanent BMPs and measures for this site.

Attachment I – Measures for Minimizing Surface Stream Contamination

The following measures will minimize or reduce the surface stream contamination.

1. The proposed permanent BMPs will minimize surface stream contamination by removing at least 80 percent of the increase in total suspended solids (TSS) generated with this project prior to discharge.

2. The development of the site increases the 100-yr storm water discharge from 6.4 cfs to 8.9 cfs. This increase does not adversely impact the overall drainage area and velocities of the runoff will be low enough to prevent any additional erosion or streambed scour. Refer to drainage areas EX1 and DA 1, 2, 4, 6, 7 of the *Hydrologic Calculations Summary* in ATTACHMENT B of the WATER POLLUTION ABATEMENT PLAN APPLICATION and the *Drainage Map* in ATTACHMENT G of the TEMPORARY STORMWATER SECTION, included as part of this WPAP submittal.

3. The proposed natural vegetative filter strip, and proposed baffle block construction on the pipe culverts for this project reduce the velocity of storm water runoff and maintain the existing characteristics of the runoff.

4. The slow rate of discharge from the filtration structure in addition to the rock gabion outfalls reduces the velocity of runoff thus reducing erosion.

5. Temporary BMP's will be used to help minimize surface stream contamination during construction. Some of these practices include the use of temporary structures (silt fence, rock berm, etc...), regular inspection & maintenance, sequence of major activities, limiting soil disturbances, and maximizing the use natural vegetation. These are detailed further in TCEQ-602, Temporary Stormwater Section for Regulated Activities on the Edwards Aquifer Recharge Zone, included as part of this WPAP submittal.

Agent Authorization

TCEQ – 0599

Agent Authorization Form
For Required Signature
Edwards Aquifer Protection Program
Relating to 30 TAC Chapter 213
Effective June 1, 1999

I Lloyd A. Denton, Jr.,
Print Name

President,
Title - Owner/President/Other

of Huey Commercial Properties, LTD.,
Corporation/Partnership/Entity Name

have authorized Westwood Professional Services
Print Name of Agent/Engineer

of Westwood Professional Services
Print Name of Firm

to represent and act on the behalf of the above named Corporation, Partnership, or Entity for the purpose of preparing and submitting this plan application to the Texas Commission on Environmental Quality (TCEQ) for the review and approval consideration of regulated activities.

I also understand that:

1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 213 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to $10,000 per day per violation.

2. For those submitting an application who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.

3. Application fees are due and payable at the time the application is submitted. The application fee must be sent to the TCEQ cashier or to the appropriate regional office. The application will not be considered until the correct fee is received by the commission.

4. A notarized copy of the Agent Authorization Form must be provided for the person preparing the application, and this form must accompany the completed application.

5. No person shall commence any regulated activity on the Edwards Aquifer Recharge Zone, Contributing Zone or Transition Zone until the appropriate application for the activity has been filed with and approved by the Executive Director.

SIGNATURE PAGE:

Applicant's Signature

August 7, 2019
Date

THE STATE OF Texas §

County of Bexar §

BEFORE ME, the undersigned authority, on this day personally appeared Lloyd A. Denton, Jr. known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that (s)he executed same for the purpose and consideration therein expressed.

GIVEN under my hand and seal of office on this 7 day of Aug 2019.

MARIA CORTEZ TREVINO
NOTARY PUBLIC - STATE OF TEXAS
NOTARY ID# 1146831-5
My Comm. Exp. May 18, 2020

Maria Cortez Trevino
NOTARY PUBLIC

Maria Cortez Trevino
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 5-18-20

Application Fee / Check

TCEQ – 0574

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: AutoZone TX5196
Regulated Entity Location: SE of Bulverde / 281 Intersection
Name of Customer: Huey Commercial Properties, LTD.
Contact Person: Lloyd A. Denton Jr. Phone: 210.828.6131
Customer Reference Number (if issued):CN 603660564
Regulated Entity Reference Number (if issued):RN _____

Austin Regional Office (3373)

☐ Hays ☐ Travis ☐ Williamson

San Antonio Regional Office (3362)

☑ Bexar ☐ Medina ☐ Uvalde
☐ Comal ☐ Kinney

Application fees must be paid by check, certified check, or money order, payable to the **Texas Commission on Environmental Quality**. Your canceled check will serve as your receipt. **This form must be submitted with your fee payment**. This payment is being submitted to:

☐ Austin Regional Office
☐ Mailed to: TCEQ - Cashier
Revenues Section
Mail Code 214
P.O. Box 13088
Austin, TX 78711-3088

☑ San Antonio Regional Office
☐ Overnight Delivery to: TCEQ - Cashier
12100 Park 35 Circle
Building A, 3rd Floor
Austin, TX 78753
(512)239-0357

Site Location (Check All That Apply):

☑ Recharge Zone ☐ Contributing Zone ☐ Transition Zone

Type of Plan	***Size***	***Fee Due***
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	1.27 Acres	$4,000.00
Sewage Collection System	L.F.	$
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	Tanks	$
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature: _____ Date: 01/09/2020
AGENT

TCEQ-0574 (Rev. 02-24-15)

Application Fee Schedule

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program 30 TAC Chapter 213 (effective 05/01/2008)

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

Project	*Project Area in Acres*	*Fee*
One Single Family Residential Dwelling	< 5	$650
Multiple Single Family Residential and Parks	< 5 5 < 10 10 < 40 40 < 100 100 < 500 ≥ 500	$1,500 $3,000 $4,000 $6,500 $8,000 $10,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	< 1 1 < 5 5 < 10 10 < 40 40 < 100 ≥ 100	$3,000 $4,000 $5,000 $6,500 $8,000 $10,000

Organized Sewage Collection Systems and Modifications

Project	*Cost per Linear Foot*	*Minimum Fee-Maximum Fee*
Sewage Collection Systems	$0.50	$650 - $6,500

Underground and Aboveground Storage Tank System Facility Plans and Modifications

Project	*Cost per Tank or Piping System*	*Minimum Fee-Maximum Fee*
Underground and Aboveground Storage Tank Facility	$650	$650 - $6,500

Exception Requests

Project	*Fee*
Exception Request	$500

Extension of Time Requests

Project	*Fee*
Extension of Time Request	$150

TCEQ Core Data Form

TCEQ – 10400

TCEQ Core Data Form

TCEQ Use Only

For detailed instructions regarding completion of this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission *(If other is checked please describe in space provided.)*

☒ New Permit, Registration or Authorization *(Core Data Form should be submitted with the program application.)*

☐ Renewal *(Core Data Form should be submitted with the renewal form)* ☐ Other

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 603660564		RN

SECTION II: Customer Information

4. General Customer Information	5. Effective Date for Customer Information Updates (mm/dd/yyyy)	00/30/2019

☐ New Customer ☒ Update to Customer Information ☐ Change in Regulated Entity Ownership

☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)*	*If new Customer, enter previous Customer below:*
Huey Commercial Properties, LTD	

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*

11. Type of Customer: ☒ Corporation ☐ Individual Partnership: ☐ General ☐ Limited

Government: ☐ City ☐ County ☐ Federal ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees
☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated?
☒ Yes ☐ No

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following:*

☒ Owner ☐ Operator ☐ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ Voluntary Cleanup Applicant ☐ Other:

15. Mailing Address:	11 Lynn Batts Lane, Suite 100						
	City	San Antonio	State	TX	ZIP	78218	ZIP + 4

16. Country Mailing Information *(if outside USA)*	17. E-Mail Address *(if applicable)*
	Lloyd@bitterblue.com

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*
(210) 828-6131		(210) 828-0504

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected below this form should be accompanied by a permit application)*

☒ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated in order to meet TCEQ Agency Data Standards (removal of organizational endings such as Inc, LP, or LLC.)

22. Regulated Entity Name *(Enter name of the site where the regulated action is taking place.)*

AutoZone TX 5196

23. Street Address of the Regulated Entity: *(No PO Boxes)*	Bulverde Rd							
	City	San Antonio	**State**	TX	**ZIP**	78258	**ZIP + 4**	
24. County	Bexar							

Enter Physical Location Description if no street address is provided.

25. Description to Physical Location:	APPROX 600 FT SOUTHEAST OF HWY 281 AND BULVERDE RD INTERSECTION

26. Nearest City	**State**	**Nearest ZIP Code**
San Antonio	TX	78258

27. Latitude (N) In Decimal:	29.692460		**28. Longitude (W) In Decimal:**	-98.450642	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
29	41	32.586	98	27	2.3112

29. Primary SIC Code (4 digits)	**30. Secondary SIC Code** (4 digits)	**31. Primary NAICS Code** (5 or 6 digits)	**32. Secondary NAICS Code** (5 or 6 digits)
5531		44131	441310

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

34. Mailing Address:								
	City		**State**		**ZIP**		**ZIP + 4**	

35. E-Mail Address:		
36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
( ) -		( ) -

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☒ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Waste Water	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Yen W. Lai, PE	**41. Title:**	Assistant Project Manager

42. Telephone Number	**43. Ext./Code**	**44. Fax Number**	**45. E-Mail Address**
(210) 265-8310		( ) -	SATXLAND@westwoodps.com

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	Westwood Professional Services	**Job Title:**	Assistant Project Manager
Name(*In Print*) :	Yen Wai Lai, P.E.	**Phone:**	(210) 265-8310
Signature:		**Date:**	01/14/2020